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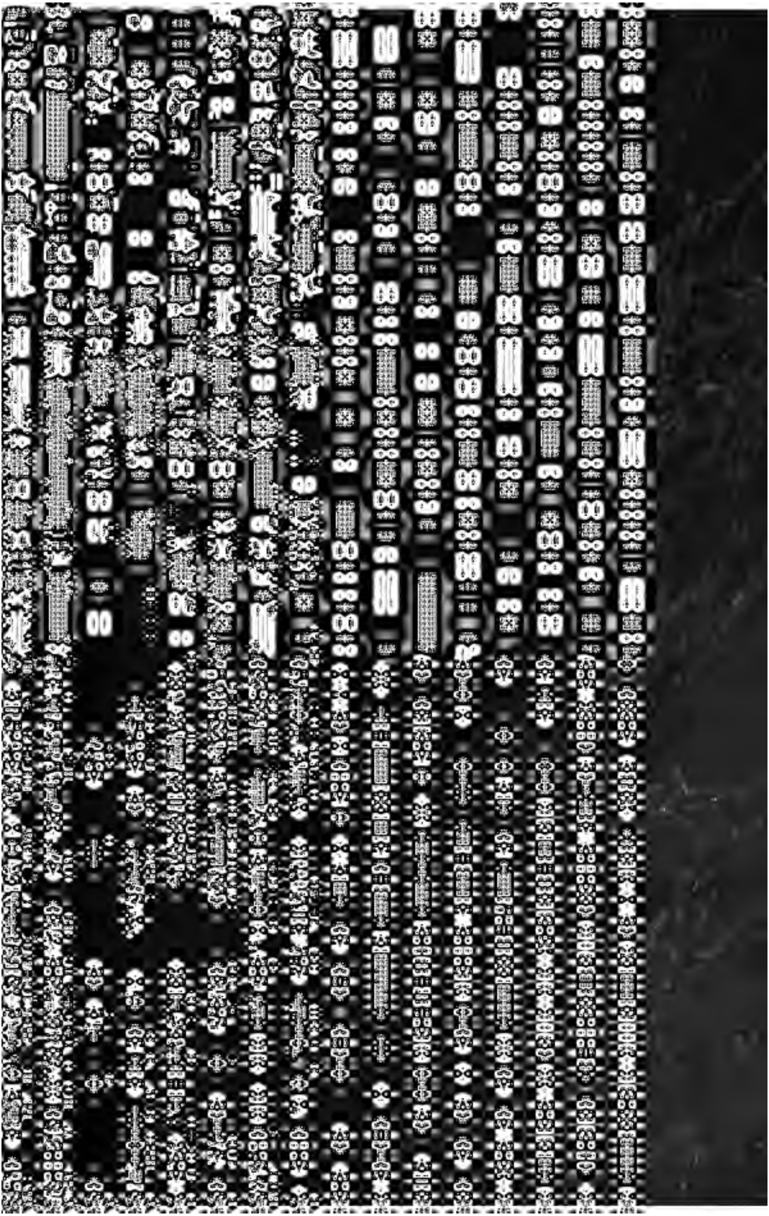

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A MANUAL
OF
DOMESTIC ECONOMY:

SUITED TO FAMILIES SPENDING

FROM £100 TO £1000 A YEAR.

INCLUDING

DIRECTIONS FOR THE MANAGEMENT OF THE

NURSERY AND SICK ROOM,

AND THE

PREPARATION AND ADMINISTRATION OF DOMESTIC REMEDIES.

BY

J. H. WALSH, F.R.C.S.

ASSISTED IN VARIOUS DEPARTMENTS BY A COMMITTEE OF LADIES.

Illustrated with more than Two Hundred Wood Engravings.

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PREFACE.

THERE are two great difficulties connected with money, which are constantly interfering with the comfort and happiness of the middle and lower classes of society, in this as well as all other countries; for, not only is it truly said to be the root of all evil, and by many supposed to be the source of all power, but it is seldom to be obtained in unlimited quantities; and consequently in proportion to the difficulty in *getting money* is the necessity for learning how to *spend it to advantage*. It is manifest that no one can live without it, even with the most complete knowledge of the principles and practice of economy; but, at the same time, it is astonishing how far a moderate supply of this grand necessary of life will carry a family, if it is well and carefully laid out. We all know how some people squander considerable incomes without obtaining either comfort or even external show for their money; and we most of us have seen the reverse of this picture, though unhappily not quite so frequently. It is not, therefore, surprising that books professing to teach correct principles of management, and to describe the details of the several departments of domestic life, have from time to time been submitted to the public, and have generally been received with avidity and read with care. Whether there already exists any treatise on the subject which is sufficient for the public wants, I do not profess to be able to decide; but I have the assurance of those who are in a position to form a correct opinion, that a thoroughly practical *Manual of Domestic Economy* will supply a want which has for some time been felt and very generally expressed. Believing, therefore, that the necessary labour would not be thrown away, I have employed myself in arranging the results of my own experience, and combining with it many practical hints which have been afforded by others at various times, so as to enable the young housekeeper of either sex to master any or all the departments into which the management of our households in this country is divided. With the exception of the details of cookery, and those included under "the laundry" and "baby-linen," there is no single compartment with which I have not been practically acquainted, from the building and furnishing of the house, through the different kinds of marketing and shopping, to the management of the nursery and sick-room. This Manual is not, therefore, a mere compilation, though the labours of others who have investigated particular subjects have been fully recognised, and in some cases introduced with an acknowledgment of their value;

but it embraces the experience of a life, twenty-five years of which have been passed in familiar intercourse with the members of numerous domestic circles, and during which every phase of middle life bearing upon the subject has been laid bare. The medical attendant has perhaps more ample and varied opportunities of obtaining correct information upon the matters connected with the details treated of in the following pages, than the members of any other class or profession. To him the good and evil of life are fully exposed; and it is his own fault if he cannot see the causes of the latter, and suggest a remedy. His education is, or ought to be, of such a nature in point of science, that much which is unintelligible to the mass is patent to his mental vision, and there is nothing in the round of domestic affairs which is not frequently submitted to his judgment, either purposely or accidentally. It is not, therefore, upon the results of a single experience only that I am enabled to draw, but on that of the many with whom the long practice of my profession has necessarily brought me in close contact.

In the following pages the First Book treats simply of the *Necessity of economy*, which is evident to us all, and is therefore dismissed with very short remarks. Book the Second indicates the best method of *Obtaining a house*, whether by purchase or by renting or building, the practical details of which last are given at length. Few people out of the building trade attain a knowledge of house-building until, having gone through the ordeal of bricks and mortar, they cease to require it; if, therefore, they decide upon undertaking the task, a practical guide is indispensable, and it is hoped that the following observations and details of prices will give the desired information in a plain and intelligible form. In this Book, the chapters on *warming and ventilation*, together with those on *lighting, water supply, and preservation from fire*, embrace the received theories and most useful appliances of modern days, relating to these several subjects so important to comfort and health. In the Book on *furniture and furnishing*, among other details, a table of prices is offered to the reader, selected in accordance with the four scales of expenditure which are throughout referred to, viz., £1000, £500, £250, and £100 a-year, so that any young housekeeper who is about to enter upon this important era of his or her life, may, as soon as the income is known, at once calculate what will suffice to supply him with corresponding articles of furniture, while the details are so plainly set down that they may easily be altered to suit particular fancies or wants. Books the Fourth and Fifth, are occupied with the *duties and supervision of servants*, and with the best methods of *marketing or of obtaining the supplies necessary for the house by home produce*. Here are included concise, but sufficiently full, directions for *baking, brewing, preserving, pickling*, &c., and contrasting the home article with that purchased in the shops. Book the Sixth gives a brief survey of the *natural economy of man as affected by his artificial habits*, and as bearing upon the various kinds of food, serving as an introduction to Book the Seventh, which enters upon the all-important subject of *cookery*. This will be found to be treated in a thoroughly practical and useful manner, adapted to the wants and fashions of the day, but only introducing those foreign dishes that are in themselves improvements upon our own. In the compilation of this book I have been fortunately able to enlist the energies of a committee of ladies, residing in various parts of England and Scotland, who have most kindly opened their private stores of information, and have supplied receipts which are of the highest practical value. Indeed, all which are here offered have been submitted to the approval of one or more of these ladies, and most of them have also passed the ordeal of a careful examination and correction by an intelligent practical cook, of great experience, who is now married, and beyond the influence of that pardonable jealousy which is too apt to lead to false information, by giving imperfect receipts as genuine. From this valued source have also been obtained the descriptive details of pastry-making, in which she is notoriously a proficient, and which, I believe, will be found far superior to any hitherto offered to the public. Many economical dishes suited to the poor man's family are, moreover, presented, which will be found scientifically calculated to give nourishment to his frame, while, at the same time, they are wholesome and palatable. Indeed, the whole of this department is framed upon the principle of avoiding waste, and of using up every particle of nourishment in some way or other. In the Ninth Book, which enters into the subject of the *lying-in room* and *nursery*, many minute points of detail as to price and management are given, which it is believed are entirely new to the public, and are likely to be of great service to the young mother. In this department the professional man is of course peculiarly at home; but it is not every one, perhaps, who will take the trouble to dive into the details of the nurse's duties. Nevertheless they are all-important, and from their neglect, owing rather to ignorance than carelessness, many lives are lost every year, and in other cases the constitution of the mother or child is irretrievably ruined. Book the Tenth, it is to be hoped, is sufficiently explanatory for the purpose of enabling the master to see into his interests as connected with the *stable* and *coach-house*; but the subject is a wide one, and can only here be partially treated. The same may be said of the last book, which comprises an account of such *medicines* and *modes of treatment of disease* as are within the scope of the manager of a household. It is here not the author's aim to offer a full account of the diseases to which the human frame is liable, and which would occupy the whole of the following pages, but simply to afford some few hints upon the treatment of the more ordinary and trifling forms of disease, and in other and more severe cases to indicate the symptoms by which they may be recognised, before such a delay has been suffered to elapse as to render the too long protracted attendance of the physician or surgeon useless and unavailing.

In the Eleventh Book, entitled the *Social Duties of Heads of Families*, the various details scattered throughout the whole are combined together, and made to bear upon the three several subjects of *Home duties*, *Duties owing to our equals and superiors*, and the *Duties owing to our poorer neighbours*; and in this division the young mistress of a household will find a mass of useful information of a miscellaneous character. Here she is taught practically how to set about her task, and the way in which her expenditure must be calculated and economised. A table is inserted in which the annual outlay in each article of housekeeping necessary for a small family is given, varying according to the whole sum which can be set apart for the purpose. Here also is to be found a series of ordinary bills of fare suited to each class of persons referred to in the book, and also the tables of weights and measures necessary for the due calculation of their proportions and cost. Besides these several points of information, which every one should be able to make use of in some form, there is appended an account of the present very sensible method of arranging dinner and supper parties, &c., which are every year becoming more widely different from the heavy and indigestible masses of provisions formerly in vogue, as is evident from the bills of fare introduced. And, lastly, the chapter on our social duties to our poorer neighbours has been inserted from a belief that many young housekeepers have the desire to benefit others if they knew how; and it is hoped that the information there contained may enable them to lend a helping hand in such a way as to do good unto others without injuring themselves.

Such is a brief summary of the contents of this volume, and of the purpose and opportunities with which it has been written. It remains to be seen how far it may succeed with a public which, in such matters, must be fully competent to form a correct and impartial judgment.

J. H. W.

LONDON, *Oct.*, 1856.

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MANUAL

OF

DOMESTIC ECONOMY.

BOOK I.

ON THE PRACTICE OF ECONOMY.

SECT. I.—EXTRAVAGANCE CONTRASTED WITH ECONOMY.

1. THOSE who have seen much of the internal arrangements of our English households, in the present century, will bear me out in the assertion, that the economy for which our ancestors were so remarkable, has too often been succeeded by a reckless extravagance of expenditure in every department. Formerly, very few heads of families were ever known to exceed their incomes; and it was only among the young and thoughtless that such a glaring act of indiscretion was ever practised. On the other hand, how few of us could avoid pointing out, within our own spheres of observation, however limited, numerous examples of large families who are being reared in the enjoyment of numberless luxuries, to which they are not entitled, and which are certain to cease either at the death of the father, or often at a much earlier period. Nothing is more melancholy than the sight of a woman, accustomed all her life to a lady's-maid, with all the concomitants, left with only sufficient to find her in the necessaries of life; yet the sum which to her is a paltry pittance would to many be the harbinger of comfort, the difference between the two simply consisting in the power which is possessed by the one, and denied to the other, of making the most of everything, and of helping herself. It is truly astonishing how much a woman will contrive to spend upon herself, when she is encouraged in extravagance; and, on the other hand, we must all admire the spectacle of the good manager, who contrives to maintain a respectable appearance, and a comfortable fireside, and also often to bestow a considerable amount of benefits upon her poorer neighbours. In the one case, there is a constant desire for excitement, which alternates with *ennui* and depression; whilst on the other, all is peace and serenity: and the possessor of these valuable qualities is a pleasure to herself and all around her. It cannot for a moment be maintained that extravagance is confined to the female sex; for too often it is shared with the husband, and in many cases the worst half is the ringleader in the scramble for display. Nevertheless, I think it may be maintained, that female extravagance is now more common than of yore, as compared with the similar quality in the male sex. This is more especially the case in the large provincial towns, where dinner-parties, evening-parties, carriages and horses, expensive clothes, and all the various items which help to swell the Christmas bills, are indulged in to an extent which must almost make our ancestors leap from their graves. Social intercourse is no doubt a debt which all incur, and should pay to the extent of their several means; but society can never demand that the sum which ought to be put by for old age, or as a provision for the family, should be spent in providing French and German wines, where port and sherry were formerly thought sufficient, or in paying for all the demands of a French cook, instead of being satisfied with a wholesome and plain dinner. French cookery and French and German wines are no doubt very palatable, and when they can be afforded, there can be no possible objection to them. But the misfortune is, that they cost ten times the amount of plain English viands; and when only occasionally indulged in, they not only please the palate at the time, but they disgust it with plainer fare. The same remark will apply to all the sub-divisions of household expenditure, from the number of servants kept to the amount expended in "finishing schools" for the young ladies, and including the important items of "the stable and coach-house." In many families of moderate income, a close carriage is now considered

absolutely essential, and yet their fathers and mothers were only able to lay by enough to provide them with the means of living, by confining themselves to a humble pony-carriage, or even perhaps dispensed with one altogether.

SECT. 2.—CAUSE OF THE NEGLECT OF ECONOMY.

2. This very general prevalence of extravagance at the present time is caused by a peculiar feature in the Anglo-Saxon race, which when kept within due bounds has led to its present high position in the scale of nations—I allude to the desire to excel, which is so remarkable in this race, and which shows itself in a still higher state of development on the other side of the Atlantic. This has led to the happiest results in our arts and manufactures, especially when united with the perseverance which is also a national feature. But in domestic life, it has led to a constant degree of emulation between neighbours and acquaintances throughout the length and breadth of the land, which is the cause of numberless heart-burnings and domestic quarrels, as well as of still greater pecuniary misfortunes. Because Mrs. A. has given a large and tastefully-arranged dinner-party, Mrs. B. must out-do her if possible; or perhaps Mrs. C. has set her heart upon a pair of grey ponies, because her bosom-friend, Mrs. D., has just started a pair of bays. Or again, the following curtain-lecture awaits some unhappy father, already taxed beyond his powers of finding funds:—"My dear, do you know that Mrs. —— has just sent both her daughters to Madame —— for a year?" "No, my love, I was not aware of it." "Well, George, don't you think that Emily and Laura ought to have the same advantages, or they will appear awkward when they come out, which you know will be about the same time?" "But, my dear Eliza, what an enormous bill I shall have to pay!" "Oh, George, how can you consider such a trifle, when your daughters' welfare and future station are at stake? Besides, it is only for a year." And so the poor father is led on to enter upon an annual expenditure of some hundreds, for the mother has entirely omitted to state that she intends them to remain two years instead of one, and then to be succeeded by the next batch of girls. It is the vice of the present day, in all but the highest classes, for each to try to tread upon the heels of the class above it. Every one wishes to be thought a step above his or her real position; and thus the maid dresses to imitate her mistress, and the latter appears in the streets in a costume fitted only for the carriage. No one will contend that we are better or happier for this excess of emulation; whilst, on the other hand, it leads to envyings, jealousy, hatred, backbitings, slanders, and a host of smaller defects. Not the least of these is a want of mutual co-operation and confidence between husband and wife, by which a separate kind of interest is held by each, and a constant state of war is maintained, either of offence or defence. Instead of that community of goods and of interest which are so essential to happiness in marriage, there is a constant suspicion, on the one side, of being "robbed;" and on the other, there is a perpetual feeling that she is not furnished with as many luxuries as her neighbours, Mrs. A., Mrs. B., and Mrs. C.

SECT. 3.—NECESSITY FOR AN EARLY PRACTICE OF ECONOMY.

3. Economy is not only necessary to the well-being and comfort of every family as a whole, but it is also desirable, by way of example to its individual members, who can never acquire its habits so well as in early life. Why is it that large families do better in life than small ones? Simply, because they have been obliged to practise self-denial and economy from their earliest years, and are able to carry out in after-life, without trouble, the precepts which have been always instilled into them. The Irishman raised upon potatoes and buttermilk, and the Scotchman upon oatmeal-porridge, will always thrive upon and enjoy these articles of diet, which, to an English stomach, are somewhat of the coarsest. And so it is with other, though less striking examples. Many children are brought up without the power of refusing them anything which tickles their fancies; and the consequence is, that when providing for their own tables, they must have peas at ten shillings a quart, and peaches at five shillings a-piece. Now, it is just this craving after delicacies that makes the great difference, *on the male side*, between a large and a small outlay; and when it is present to any extent, no mistress, let her be ever so good a manager, can gratify it, day after day, without an enormous increase in the weekly bills. It is true, that she will be able to do much towards indulging her husband's wishes at a trifling increase of cost; but if he is very *exigeant*, she *must* make great inroads on his purse. But, in addition, if she is a bad manager, and has not learnt her part early in life, she will, at all events, have hard work to make up, by dearly-bought experience, for her mother's neglect, and frequently will give up in despair, even if she has the will to learn, which is too often absent. No more valuable lesson can be instilled into the young by their parents,

than this economy of money or of money's worth, requiring as it does, at that age, chiefly a control over the strongest appetite yet developed, but which is active enough to tax the powers of the child as greatly as more important temptations in after-life. If to these lessons in both sexes are added practical examples of the use and abuse of money, and of its power of promoting our happiness in this world, or of causing endless misery, there will seldom be any occasion for that domestic discord which is now so often seen.

SECT. 4.—CO-OPERATION OF MASTER AND MISTRESS REQUIRED.

4. In order to practise domestic economy with effect, several things are essentially necessary. In the first place, a settled outlay should be fixed upon as the outside sum to be expended during the next year. Secondly, this sum should be paid over to the managing party in weekly or monthly instalments *punctually*. Thirdly, regular accounts should be kept, and an exact estimate should be made, of every item of expenditure for the current year. Fourthly, each partner should be made acquainted with the necessary outlay required in those branches undertaken by the other. Thus, suppose the husband manages the rent and taxes, the cellar, the stable, the coal department, and the garden, whilst the wife takes the remaining items; then let each explain to the other what will be the proposed outlay, and let them both endeavour to keep within their estimates. And this should be done, not with a view of saving for other little extravagances, but for the sake of the principle involved, and in order to please one another. It is not by the mere saving that a home is made comfortable, but by making the most of every thing, and keeping as good a table as the outlay is capable of affording. Between the two extremes of pinching economy and extravagance, there is a difference of 75 per cent. in money, though perhaps not much in comfort and happiness, the one being almost as miserable as the other. A well-ordered English household affords just the happy medium between the two. In it every real want is quietly and regularly supplied at the cheapest possible rate consistent with good quality, whilst the confidence of every member is given to all the others, because each is convinced that it will not be abused. Without a knowledge of the power of money when economically expended, this confidence is never felt, and therefore it behoves every one who is dependant upon other members of a household, to arrive at a certain theoretical amount of it, though he may not require actually to put it in practice. Ignorance is a constant source of suspicion, and this we know to be the bane of domestic peace. Within my own sphere of observation, I have known numberless instances in which young married couples have either been deceived, or fancied that they were so, by their second selves, solely because they had no reliable means of information upon the necessary worth of articles which were certainly wanted in some shape. Thus, a young man with a small income, six months after marriage, is asked for some article of dress, of which he knows nothing as to price, and either he indulges his wife when he ought not, or else denies her when he ought to give her what she requires. The same remark applies to articles of domestic use, in which very often there is a material difference in the cost, and a discussion upon which leads to bickerings and differences, depending solely upon the ignorance of one party or both. My object, therefore, in the following pages, is to afford such information to those who are desirous of it, as shall enable them either practically to carry out the various items of household expenditure, or theoretically to enter upon a discussion of their respective merits and demerits, their cost, and their application to the various wants of the family.

SECT. 5.—EXPLANATION OF THE PLAN ADOPTED.

5. In the following plan, it is assumed that a fixed sum, varying from £100 to £1000 a-year, is to be laid out in certain items of expenditure, comprehended under the following heads:—1st, the house; 2nd, the furniture; 3rd, the servants; 4th, provisions; 5th, maintenance in health; 6th, management of the sick-room; 7th, social duties; and 8th, carriages and horses. This sum is irrespective of all laying by, and of the items merely for education. It is usual among prudent men to set aside one-third of their incomes for this purpose, which is either invested in life assurance, or in other modes which may seem more advantageous. In some cases it is not possible to do this, but these are the exceptions; and, as a rule, it may be assumed that one-third is set apart for these purposes. Whenever, therefore, in the following pages, allusion is made to the expenditure, it must be understood that it is meant that this shall not include anything more than is comprehended under the above-mentioned heads. No question, therefore, connected with the education of children beyond the nursery or with the investment of money will be here considered, these being found to embrace such wide fields of investigation, as to exclude them from the limits of the following

pages. With regard to the range of expenditure from £100 to £1000, there is obviously a wide difference in the establishments required; but still the same principles which are applicable to the one extreme are useful in the other; and though the highest sum affords numerous luxuries which are denied to the other, still the lowest will enable its possessor to afford himself the actual necessaries of life, with a moderate share of comfort, if it is managed by a good housekeeper, to whom it is also punctually paid. It is obviously impossible to allude to all the various incomes between these two points; and it will be necessary to confine all remarks to the four sums of £100, £250, £500, and £1000. It should always be remembered, that a family accustomed to good management will do better upon £900 a-year than another, differently brought up, will upon £1000. I do not mean to say that they will make the same display, or command the same luxuries; but they will be free from debt, and happy among themselves. The great secret in all cases is to avoid buying what is not wanted, and also to steer clear of all fancies for those things which are difficult to obtain, when the fancy is founded upon the difficulty alone. It often is the case, that dear things are really the cheapest in the end, and such ought to be selected; but, at the same time, cheap ones should not be rejected simply because they are cheap. The really good manager counts the cost of everything, and is able to weigh the value of each, as compared with its price. Absurd prejudices and fondness for novelty are alike to be deprecated; whilst the happy medium between the two affords the position which enables the possessor to arrive at all that economy is capable of achieving.

BOOK II.

THE HOUSE, AND ITS ACCESSORIES.

CHAP. I.

MODES OF PROCURING A HOUSE.

Sect. 1.—By Purchase.

6. "Fools build houses for wise men to live in," is an old and generally a true adage, which every one should bear in mind in looking out for a house. No one would willingly incur the risk, trouble, and expense of building, if he could possibly buy what he wants ready to his hand. The economist, therefore, who has the command of money, *and is likely to remain stationary*, will do well to look out for a suitable residence; and if he can meet with one, he may expect to save the difference between the current rate of interest for his money and that which freehold houses on the average pay, which is generally from 6 to 10 per cent. He will often be able to meet with long-leasehold houses, which will give him a much better interest; but here he must consider that he is sinking capital, and he must therefore put by a certain sum yearly, to repay it at the end of the term. But if he makes up his mind to do this, *and does it*, or if he calculates it as a part of his rent, he will often be enabled to get a leasehold house for a much lower sum, in proportion, than he would have to pay for a freehold. There is a very proper prejudice for this latter tenure, which always makes a considerable difference in the value to sell, but which does not always apply to the purchaser of house-property for the purpose of living in it, unless he contemplates either a short residence there, or the probability of requiring an increase to its size. In spite, however, of the superior comparative cheapness of leasehold and copyhold house-property, it can scarcely be recommended in preference to freehold, because in case of death, or of change of circumstances, to which all are liable, it is so much more difficult to dispose of. The purchaser is, therefore, strongly recommended to look out for a freehold property, if he can meet with one; and failing this, to endeavour to meet with a long lease of 70, 80, or 90 years, at a fixed ground-rent, which is really almost as good. All leases with uncertain fines are to be avoided, and are only adapted to the speculator and to the man who, being connected with the law, can transact its business without those heavy fees which are incurred whenever Deans and Chapters, or other similar bodies, are to be dealt with.

7. The Value regulated by Tenure and Rental.—House-property in the various parts of Great Britain fluctuates very considerably in value, depending greatly upon the stability of the district, and the price of material and labour. The former, however, is the main element in the calculation, because the value of materials can always be known, but the stability can only be guessed at. Thus, in a steadily established neighbourhood, a builder calculates that his investment is worth 20 or 22 years' purchase, while in a mushroom watering-place, which is dependant upon fashion, he will not like to speculate without calculating upon turning his money round in less than half that time. This is the reason why rents are so high in the latter class of places, inasmuch as it is a perfect lottery whether they will pay any at all at the end of half a dozen years, although now they may be crowded to the utmost. These points therefore being taken into the account, the intended purchaser will be easily able to calculate whether what he is looking at is cheap or dear; but he should always ascertain really what the house is worth to rent, what state of repair it is in, and what is the prospect of its continuing to let, if he should wish to give it up. In these several points he must be guided by the advice which he receives from competent persons, unless he is himself able to judge; but in most cases he will find it to his advantage to apply to a respectable surveyor who will look over the premises, and give him his opinion.

8. The Expenses of Conveyance form rather an important item in the consideration of the value of house-property to an intended occupier. They should therefore in all cases be set down in the calculation; and I believe they may be estimated sufficiently for the present purpose at about three per cent., supposing the whole value on the average to be about £1000, and the tenure to be freehold. In some cases I have known from 40 to 50 per cent. on the purchase-money paid for the conveyance, but these were only in cases where the property was small—that is, not exceeding £150 or £200 in value. The expense for leaseholds is not nearly so heavy. This is of course only an approximation, but it may serve as a guide, however slight. In all cases the whole legal business must be conducted by a solicitor; and great care should be exercised in his selection.

Sect. 2.—By Renting.

9. Every one who has the command of money, has naturally enough a pleasure in living in a house of his own, because he

of the risk and inconvenience which too often attend upon it. The first great error consists in beginning too soon. Every plan should be fully matured and weighed, before a single day's work should be done. The proprietor should first make himself master of every detail as to prices of materials, by personal application at timber-merchants', brick-yards, stone-quarries, lime-kilns, &c. He may then ascertain the price of labour in each department, and of delivering the articles at the intended site, after which it is time for him to begin to decide upon his plan. The reason for this mode of proceeding is, that when money is an object of great consideration, the comparative price of materials, and of hauling them to the spot, will often guide to the choice of plan. Thus, in some situations freestone is cheap and brick dear, while in others, stone may be very expensive and brick either cheap or easily made on the ground, in consequence of the soil being a clay fit for the purpose. Now, in proportion as the one material is better adapted than the other to a particular style, so should that style be selected when the material suited to it is the cheapest. The choice of plan, however, depends upon still more varying considerations, and it is one which calls for great judgment and firmness on the part of the master-mind. Where there is a family, each member will be sure to call out loudly for a pet project; and if all are gratified, the sum total would generally exceed the limits set by the paternal will. The difficulty, therefore, consists in trying to gratify all in part, and it is no slight task to do this. One member will demand high rooms; another will be imperative in the matter of a good-sized room, fit for dancing; whilst a third will want plenty of snug corners for a quiet gossip or flirtation. The master who tries to please all, will try in vain, and he will find this only the beginning of his difficulties. But suppose this matter settled, he has next to consider how he shall carry out his plan—whether he shall employ an architect, or build in his own way; and this must be the subject of a distinct investigation. But in any case, he must make up his mind to be firm in the matter of outlay, if it is a subject of importance to him; and if not, it is quite unnecessary for him to trouble himself with these remarks.

21. Architects' and Builders' Bills are so often sore subjects in families, that it is perhaps as well to enter here a little in detail into a consideration of the principles upon which they conduct their business. The former profess to draw the plans, and superintend the building of houses, for five per cent. upon the outlay, which in a large scale is very good pay; but in the case of a house which ought to cost let us say £1000, the trouble of drawing plans, and of properly superintending the execution of the work, is nearly as great as in a large public building, and would never be properly remunerated by the payment of £50. The consequence is, either that the architect neglects his duty of superintendence, or else he pays himself in other ways, such as increasing the expenditure, or receiving an extra per centage from the builder. Both of these practices are so common, as to be the rule rather than the exception; though I have no doubt that there are many gentlemen in the profession whose business is of so high a character, as to set them above the temptation to which others are subject. It must, however, be remembered, that their hands are generally tied up in house-building, by the whims and crotchets of their employers, and that their taste is often so shocked, that they are tempted to revenge, by dipping into the pockets of those who will not submit to the dictates of their better tastes. This, however, although it may excuse their practices in some measure, is yet a very lame apology; and the profession are bound to purge themselves from the practice, by adopting a different course. Whenever taste is an object which can be gratified with propriety, an architect ought to be consulted before drawing the plans; but it by no means follows that he should do more than this. If the proprietor will only set before him what he wants clearly and plainly, a properly qualified architect ought always to be able to draw a plan suited to his views and to his purse. The difficulty generally lies in persuading the architect to count the cost, partly because he benefits by an increased expenditure, and partly for the sake of gratifying his taste for what he thinks the beautiful. The latter is a motive which we can hardly blame; yet there can be no doubt that he has no right to indulge in expensive ornamentation, when he knows it is contrary to the wishes and means of his employer. For this plan and specification the architect ought to be properly paid; and no one should grumble at his demanding such a sum as is commensurate with his previous outlay in education, and with his skill in designing. But beyond this, he ought not to be charged with the work, which should now either be superintended by the owner or by a clerk of the works. It must be remembered that an architect is generally educated at an expense varying from £500 to £2000 or £3000. How, then, can he be expected to fulfil an office which a clerk of the works, at a salary of two or three pounds a-week, will give his whole time to ; and not only that, but is really much better

fitted for it by practical experience. It is not an occasional inspection which will prevent fraud in the use of improper materials, but a constant and careful supervision only; and hence, with all his care in looking over a house once a week or fortnight during the building, an architect will be liable to pass over defects. I am quite satisfied that the profession would gain in public estimation and support, if they would adopt this plan, and that hundreds of men who now do not pay for the rent of their chambers would be employed in drawing plans and specifications, if they would afterwards give up the superintendance to other hands. At present it is difficult to do this; if the plan is drawn, the designer persuades the owner that no one else can carry out his views; and too often this is the case, for numberless instances occur where the original plan requires modification from some radical defect. But if architects were more often employed in this description of work, they would succeed better than they now often do, and would not then design houses without staircases, as the standing joke alleges against one of the calling.

22. A CLERK OF THE WORKS is simply a practical man, who not only understands the nature of work of all kinds thoroughly, but can calculate quantities, set out plans, and keep accounts accurately. He should of course be honest and steady; and he should be able to manage and control the journeymen at work, if the house is to be built by the proprietor, without the intervention of a master-builder. In the case of the employment of this last person, the clerk of the works is his servant, and furnishes the details of the plans as they are wanted, and sees that they are properly carried out. But in houses of a size suited to the incomes which demand economy, and which I have limited in this book to £1000 a-year, a clerk of the works will pay for his salary when he is employed by the owner himself to superintend a number of journeymen who are engaged either by day or piece-work, independent of a master-builder; and such I believe to be the best mode of proceeding, as I shall endeavour to explain in a future chapter.

23. MASTER-BUILDERS are employed either by contract, in which case they require a detailed specification, usually drawn out by an architect, or else they undertake to build, charging for materials and day-labour, to the net cost of which they profess to add from 20 to 30 per cent.; or lastly, they charge what is called "measure and value," estimated at prices published annually in certain *price books*, which are always the top prices of the respective periods in the London market. Now, as labour is 50 per cent., and most materials are from 10 to 30 per cent., higher there than in many parts of the country, it is absurd to allow of such a scale of prices being charged out of London; yet this is often done from the first, and still oftener as the sole mode of terminating a dispute. The higher branches of the art of building demand a long experience and great aptitude for mathematical calculation, as well as promptitude in devising expedients to meet the constantly occurring accidents to which even the best schemes are liable. But in every-day house building nothing of this high order of science is required, but only a very limited knowledge of mechanics. Hence it follows, that a master-builder is by no means required; and if, instead, a good and trustworthy clerk of the works can be obtained, who will not mind putting his hand to little odd jobs, he will save some hundreds in the outlay. In point of economy, the next best plan is to enter into a contract with a respectable builder, taking care to have his work well supervised either by the architect or by the owner, if competent, or if not, by some other party who is. As I have already remarked, there is too often an understanding between the builder and the architect, and therefore it is not always safe to trust to the supervision of the latter; and yet in case of a contract, the payment must always be subject to the approval and order of some third party, and there is no one else who can be fixed upon to the satisfaction of the builder. The system of contract, therefore, necessitates the employment of both the one and the other; and, as is to be expected, it fails to give satisfaction on the small scale, although in large public buildings it may answer well enough. In them the reputation of the architect is at stake; and he is bound to attend to his duties, and in fact he generally does.

24. THE PRICES of the materials given in the next chapter are calculated from lists given by highly respectable timber, slate, and stone merchants, &c., as those at which they furnish private customers with such quantities as are required in ordinary house building. Large and regular consumers, such as the proprietors of extensive estates, builders, &c., are supplied at from 5 to 10 per cent. cheaper. In many cases a discount is taken off for cash, varying from 2½ to 35 per cent.

CHAP. II.

BUILDING MATERIALS.

Sect. 1.—Quarried Stones.

25. Quarried stones are those found in a natural state in the bowels of the earth, as distinguished from the artificial substitutes for them which man forms in situations where nature refuses to display the former useful material. In many extensive clay districts no stone is found, and building of any material but wood is almost impossible without the aid of the brickmaker, who fashions and burns the clay into a kind of artificial stone. There is a great variety of quarried stones used in Great Britain, consisting chiefly of the following: 1st, marble; 2nd, granite; 3rd, oolitic and magnesian limestones; 4th, sandstone; 5th, unhewn rough stones of various kinds, including flint stones, and used in what are called rubble walls; 6th, slate of various thicknesses and qualities.

26. Marbles are of numberless qualities and colours, varying from the pure white of Carrara to the highly-coloured serpentine and black and gold. For our present purpose it is unnecessary to do more than to give the prices of those which are suited to the only part of domestic residences for which this material is employed in this country. The price is calculated in slabs of one inch thick, at per foot superficial; and if the marble is required thicker, or the reverse, a proportionate increase or reduction must be made.

Price of Rough-Sawn Marble in the 1-inch Slab.

Statuary	6s.	0d.	to	9s.	0d.	per foot super.
Vein	1	6	,,	1	9	,,
Sicilian	1	2	,,	1	4	,,
Black	2	3	,,	2	4	,,
Dove	2	3	,,	2	6	,,
Black and Gold	2	9	,,	3	0	,,

27. Granite is little used in house-building. It is obtained from quarries in Cornwall, Devonshire, and Scotland, the price varying according to the locality. In London the granite is nearly all either from the Cornish or Aberdeen quarries, and the price is about from 3s. to 4s. per foot cube; depending upon the size and quality of the stone. Paving-stones of granite are little more than half this price.

28. Oolitic Stones consist chiefly of the three following varieties, to which however some few may be added, but which are only used in very limited circles; the three are: Portland, Caen, and Bath Stone. The two first being of a fine texture, and a pale, almost white, colour, whilst the last is of a yellowish cast, and neither so fine nor so durable as the first, though perhaps superior in these respects to the second. All are composed of an aggregation of small shells and other fossil remains, cemented by carbonate of lime.

Price of the various Commoner Limestones per Cubic Foot.

Variety.	At the Quarry.	In London.
Portland......	1s. 4d. to 1s. 6d.	2s. 3d. to 0s. 0d.
Bath..........	0 6 ,, 0 7	1 8 ,, 1 10
Caen .... Aubigny...	0 4½ ,, 0 7	1 3 ,, 1 10
Magnesian...	0 10 ,, 0 0	2 0 ,, 0 0

29. There are several sandstones used in building throughout Great Britain, some of which are very durable, whilst others are as quickly perishable by exposure to the air. The red sandstone is in some districts sold at 2s. per ton at the quarry, and very commonly at 5s. and 6s. Grey sandstones are generally harder, and sometimes are so much so as to be fitted for steps and sills. The following are the prices in the London markets, which however may be considered about the average prices for stones, of a similar quality, at any distance more than 20 or 30 miles from the quarry:

Prices of various Sandstones.

Variety.	Price at the Quarry.	Price in London.
Abercorne	5s. per ton.	1s. 6d. to 0s. 0d.
Calverly	0s. 4d. to 0s. 6d.	1 3 ,, 0 0
Craigleith	0 8 ,, 2 0	1 6 ,, 3 6
Derbyshire......	0 9 ,, 1 0	2 6 ,, 0 0
Gatton (Surrey)	1 3 ,, 1 6	....
Staffordshire ...	0 6 ,, 1 0	....
Yorkshire	0 6 ,, 0 8	1 2 ,, 1 6
Do. Whitby Co.	0 10 ,, 1 0	1 8 ,, 2 0

Sundry Kinds of Stone in Use.

Inch.		
		per 100 ft. super.
1½	Tooled Yorkshire Paving ...	36s. 0d.
2	,, ,, ,, ...	45 0
3	,, ,, ,, ...	60 - 0
		per foot. super.
3	Tooled Yorkshire Landings ...	1s. 0d.
4	,, ,, ,, ...	1 4
—	Tooled York Sinks ...	1s. 9d. to 2 0
		per 100 ft. super.
—	Self-faced Yorkshire Slabs...	30s. 0d.
2	Rubbed York Paving	56 0
—	Purbeck Paving	53 0
—	Caithness Flags ...	45s. to 63 0

Inch.		per foot super.
1	Warwickshire Blue Lias ...	0s. 9d.
1½	" "	0 10
2	" "	0 11
3	" "	1 1

30. **Flints and rough rubble-stone** are seldom used, except on or near the spot where they are found; and there they may generally be obtained for a very low sum, averaging perhaps 1s. per cubic yard. The hauling is the chief item in all cases of this material, and when the distance is considerable it brings the price up to an amount which forbids its use.

31. SLATE is used either in slabs of one, two, or three inches thick, for the purpose of paving or for door-steps, or galleries and balconies, or again for forming cisterns. When split into thin layers it constitutes the species of roofing known as "slates." The slates used in London and the south of England are almost all brought from Bangor, in Caernarvonshire. Lightness is an essential quality, on account of the stress which a heavy slate throws upon the roof; but sponginess is equally to be avoided, and therefore the weight of a slate should always be calculated *when soaked in water*, since the more it absorbs, the more it will weigh after rain. Those are the best which feel hard and rough, and ring well when struck with a light tool; but no one should buy slates without some slight experience, any more than any other building materials. In calculating the quantities required, it is obvious that the smaller the size of the slate, the greater number will be required to cover a square of roofing.

PRICE OF SLATE AND SLATES.

Inch.		per foot super.
¾	Slate Slabs (self-faced or quarry-planed ...	0s. 4d. to 0s. 6d.
1	" " ...	0 8 " 0 10
2	" " ...	1 0 " 1 6
1	Cisterns, complete ...	1 4 " 1 8

SLATES.

		per 1000 of 1200.
Ladies ...	(1 ft. 4 in. by 8 in.) ...	£6 10 0
Countesses	(1 ft. 8 in. by 10 in.) ...	8 0 0
Duchesses ...	(2 ft. by 1 ft.) ...	11 10 0
Queens	(3 ft. by 2 ft.) ...	24 0 0
Imperials	(2 ft. 6 in. by 2 ft.) ...	20 0 0
Patent ...	(2 ft. 6 in by 2 ft.) ...	20 0 0

			square.
1000 Ladies ...	(16 by 8) ...	will cover	4½
" Countesses	(20 by 10) ...	"	7
" Duchesses	(24 by 12) ...	"	10
" Rags and Queens	(36 by 24)	"	20
" Imperials	(30 by 24) ...	"	30
" Patent	(30 by 24) ...	"	40

SECT. 2.—ARTIFICIAL STONES.

32. BRICKS are the most common substitutes for stone, and are in common use wherever brick-earth can be procured at a cheaper rate than stone. In some districts the reverse is the case, as in the oolitic formation for instance, where stone is used as the common farm-fence. Bricks are manufactured by tempering the clay by means of a pug-mill, and then squeezing it into a mould; it is afterwards dried and burnt. Their goodness depends upon the quality of the clay and the perfection of the workmanship. The best brick-earth is a clayey loam, neither containing too much sand, which would cause them to be too brittle, nor too much clay, which has a tendency to shrink and crack in the burning. It should be dug the year before it is wanted to be made up, in order that all vegetable and animal matter contained in it may be given off. It is usual to dig it in the autumn, and allow it to remain till the spring, subject to the action of the frost and rain. In the spring it is worked up by the mill, and is then moulded either by the hand of the brick-maker or the brick-making machine; after which it is dried in the air, and then burnt in a clamp or kiln.

33. CLAMPS are most commonly used near London, and are of an oblong form, with the worst bricks placed at the bottom, and, hence, called "place bricks." The good bricks are then ranged tier over tier, with a layer of breeze or cinders two or three inches thick between all the courses, and the whole is covered with a thicker stratum of the same material. Against one side (usually the western) a fire-place with a flue is built, and this flue branches out into others running through the clamp, and filled with coals and wood, packed closely with breeze in the intervals. In this mode a clamp may be burnt in rather less than a month. *Kilns* are in use in the Midland and Northern districts of England, and generally form very nearly a cube of 12 feet on every side. The walls incline slightly inwards, and are from 14 to 18 inches thick. The fire-place is ranged in arches (either three or four in number), with spaces open at the top, forming a kind of open net-work, above which the bricks are piled to the number usually of 20,000 at a time. At first the mouth of the fire-place is closed up with pieces of brick and wet clay, which are gradually removed as the fire increases. Fuel of various kinds is used in different localities, from coal to heath and brushwood, and the time varies from two to four days. The price for making and burning is affected considerably by the value of labour and fuel.

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Straight Pipes.

9-inch	1s.	1½d.	per ft.
12 „	1	10	„

Bends.

3-inch	1	3	each.
4 „	1	9	„
6 „	2	3	„
9 „	3	6	„
12 „	5	6	„

Double Junctions.

3-inch Main Tube	1	8	each.
4 „ „	2	0	„
6 „ „	2	8	„
9 „ „	4	6	„
12 „ „	7	0	„

Single Junctions.

3-inch	1	3	each.
4 „	1	6	„
6 „	2	0	„
9 „	3	6	„
12 „	5	6	„

Long Syphons.

3-inch	2	6	each.
4 „	3	6	„
6 „	5	0	„
9 „	7	6	„
12 „	10	0	„

Sink Traps.

3-inch	4	0	each.
4 „	4	0	„
6 „	5	0	„
9 „	7	6	„
12 „	10	0	„

Syphon Traps.

2-inch	1	0	each.
3 „	2	0	„
4 „	2	0	„

Water-closet pan with syphon, 5s.

37. Patent Artificial Stones are employed for various purposes with good effect, and by many are supposed to be more durable than the natural stone. When used for ornamental work, as, for instance, Gothic windows, &c., they are much cheaper than worked stone; but as to their durability, time alone can show. The price must depend upon pattern.

Sect. 3.—Mortar, Plaster, Stucco, and Cements.

38. Mortar is used for the purpose of uniting bricks and stones, and is made of lime and sand in varying proportions. Lime consists of either chalk or limestone burnt in a kiln till the water and carbonic acid are driven off, and the lime is left more or less pure, and is then known as "quick lime." In this process the stone loses about one-half its weight; but the bulk varies very slightly, till it is exposed to the air, when it re-absorbs carbonic acid and water, crumbles and expands to double its former bulk, and is called "slack lime." There are numerous qualities met with throughout England, some of which, as the Bristol lime, are of a pure white, while others are bluish or brownish in colour; but, being a bulky article, it is usual to employ the quality met with in the neighbourhood, choosing, of course, the best within reach. The two primary varieties are stone-lime and chalk-lime.

Price of Lime in London.

Grey lime, 10s. per cubic yard, or £38 per 80 yards.

Chalk lime, 8s. do., or £27 do.

Cartage, 1s. to 2s. per yard, according to distance.

In the midland districts lime is sold by the load, or by the ton, varying greatly in price.

39. Sand, and Gravel for concrete, are met with in most parts of England; but sometimes they are very scarce. No sea-shore sand should be used in building, as, in spite of all washing, it will retain its saline qualities and absorb moisture. Sands free from clay are called "sharp," and make very strong, good mortar; when the quantity of clay is considerable they require washing. The price of sand varies from 2s. to 5s. per cubic yard. In many places sand may be got on the premises by sinking a pit.

40. Hair, used in plaster for the purpose of holding the parts together, is sold by the pound; the quantity consumed is not sufficient to make its cost an important consideration, but the price varies from 10d. to 1s. 4d. per lb. in different localities.

41. Plaster of Paris, which is calcined gypsum, or sulphate of lime, enters into the composition of cornices and internal mouldings of all kinds. Wherever, also, wall plaster is required to set rapidly, a mixture of this article with common lime is employed. The prices are as follows, in the London market:—

	s.	d.
Plaster (coarse), per cask of 3 cwt.	13	0
„ (fine), „ „	16	0
„ (coarse), per sack of 2 cwt.	9	2
„ (fine), „ „	11	2
„ (coarse), per firkin	3	6
„ (fine), „	4	6

42. Cements of various kinds are employed in external and internal house work. Roman cement is made in and near London, which goes by the name of the London or Parker cement; and at and near Stourbridge, called the Stourbridge Roman cement. The London variety is

much darker in colour, and is generally considered superior to the Stourbridge quality; but the latter is much better made now than formerly, while the London cement is said to have deteriorated in its good qualities. Both are too dark for external work without colouring; and hence there have been sold and used of late years two cements—one in imitation of Portland stone, and the other of Bath stone, and called after the respective native stones. All are mixed in use with varying proportions of sand. Parian cement is still whiter, and is intended as a humble imitation of marble. The prices are as under, in London:

CEMENTS.	s.	d.
Roman Cement, per cask, of 5 bushels	6	8
Portland Cement, per cask of 4 bush.	8	6
Bath Cement, per cask of 4 bushels ...	9	0
Keene's Patent Marble Cement, per bushel	3	0
Parian Cement (coarse) per bushel ...	4	3
" " (superfine) " ...	6	8
Mastic, per cwt.	4	6
Atkinson's Cement, per bushel	3	0

43. MORTAR is made of varying proportions of lime and sand, depending greatly upon the species of lime used. The average proportion is as 1 of lime to 3 of sand, but with many kinds 1 to 4 is a still better and stronger proportion. Sometimes cinders are added to increase the hardness or give colour, both of which purposes they effect. Common mortar is made as follows:—A bed of sand is first made by heaping it up around the space, which is to be occupied by the mortar. In this area the quick lime is then heaped, and water thrown over it sufficient to slack it; after this enough sand to cover all up is thrown over the surface, and the whole is left till the next day, during which time the lime becomes thoroughly slacked. The next operation consists in mixing in more sand and water, which is done by the labourer usually with his shovel, beating it over again and again, until the whole is thoroughly incorporated. It is now fit for use, and should never be laid on more than a day or two old, if it is desired to set strong, and to adhere firmly to the bricks. The contrary opinion is very commonly held, but it is merely an excuse for laziness, and to avoid the waste which occurs when mortar long mixed is rejected. I am quite satisfied that the strength of brick walls mainly depends upon attention to this point. Sometimes a mortar pug-mill is used when large works are in hand, but for our present purpose such an adjunct is not needed, or even desirable, because it mixes too large a quantity at once.

44. CONCRETE consists of lime and gravel, mixed as fast as it is used, and poured into the trenches cut for the foundations from a height of six or eight feet, using a stage for the purpose. It sets into an uniform solid body, which forms an excellent foundation.

45. PLASTER for the walls requires all the lime to be slacked in a large iron furnace or wooden tub, where it is mixed with water, till it assumes the consistence of cream. It is then strained off into a large area, bordered by sand to a height of about eight inches, where it is left for ten days or a fortnight, and is then mixed with sand in the proportion of three, four, or six parts of sand to one of lime. Sometimes Bristol lime is used, in which case no sand is mixed with it, and the mortar is as white as snow, and is called "putty." Hair is sprinkled over the lime before the sand is added, and worked thoroughly in with a rake. Plaster mixed largely with sand, and hair added to it, is called "coarse stuff," and is used for the first rough coat. Lime mixed with water, and left to get thick, with or without the addition of hair, is denominated "fine stuff." When plaster of Paris is added, it is called "gauge stuff."

46. IN PLASTERING CEILINGS and wooden partitions, laths either of oak or fir are used. According to their thickness they are called "single, lath and a half, or double;" and the oak are also either "sap" for internal work or "heart" for tiling. The prices vary much in different localities, depending, in some measure, upon the prevalence of oak timber in the neighbourhood, and also of course upon the thickness of the lath. From 2s. to 4s. per bundle will include almost all their variations. A bundle will cover about 4½ yards, using for the purpose about 300 nails.

47. ROUGH CAST AND STUCCO are forms of mortar used for external work, the former being mortar mixed with fine gravel, while the latter is composed of sand and lime, mixed *when dry* carefully together, and then tempered with water, and used as rapidly as possible.

48. PUGGING is rough plaster, mixed with chopped hay, spread over rough boards fixed between the floor and the ceiling, to break the sound between the several floors.

49. FOR CORNICES, MOULDS are required: first, for running the continuous members; and, secondly, for casting the enrichments.

SECT. 4.—TIMBER.

50. The timber used in England for building is partly of British growth, and partly foreign. To the former belong the oak, ash, elm, beech, larch, poplar, chestnut, and walnut; whilst under the latter are

comprehended varieties of the three last, and also red and white deal, red, yellow, and white pine, mahogany, of the Honduras, African, and Spanish kinds, and, in addition, teak and foreign oak.

31. OAK is the most valuable for building purposes; but its price per foot, and also its costliness in point of labour, forbid its extensive use in all situations but those where deal is liable to decay, as in lower floors, &c. Next in durability come the finer qualities of Baltic deals, called in London yellow, and in the midland and northern counties red deal. For the timbers above the ground-floor and for doors, and similar internal work, the Quebec yellow pine answers remarkably well. Of the Baltic timber, Memel is the most convenient in point of size, or "scantling," as it is termed; Riga is the best in durability, Dantzic is the strongest, and Swedish the toughest. Red pine from America is as good as the Baltic, for all purposes; and, being very free from knots in the butt-end of the tree, it is peculiarly adapted for staircases. Baltic timber is imported either in "balks"—the whole tree squared—or in "battens," 7 inches wide; "deals," 9 inches; and planks, 11 inches in width. 50 cubic feet make "a load;" 120 deals are called "a hundred." For framing, the best are the Christiana battens; and for panelling, the Christiana white. Swedish deals are not to be depended on for framing, as they are very liable to cast or twist out of the square. Yellow pine, on the other hand, has the opposite quality to perfection, and is a very useful wood in joiner's work. Red pine, or Baltic timber, should always be used in external work of all kinds; and either one of these or oak for the joists of ground and basement floors.

TABLE, showing the Cubical Contents of 11-inch Planks, 9-inch Deals, and 7-inch Battens, of 2½ and 3 inches in thickness.

Length.	11 by 2½ Planks.			9 by 2½ Deals.			7 by 2½ Battens.			11 by 3 Planks.			9 by 3 Deals.			7 by 3 Battens.		
Ft.	ft.	in.	pts.	ft.	in.	pts.	ft.	in.	pts.	ft.	in.	pts.	ft.	in.	pts.	ft.	in.	pts.
8	1	6	4	1	3	0	0	11	8	1	10	0	1	6	0	1	2	0
10	1	10	11	1	6	9	1	2	7	2	3	6	1	10	6	1	5	6
12	2	3	6	1	10	6	1	5	6	2	9	0	2	3	0	1	9	0
14	2	8	1	2	2	3	1	8	5	3	2	6	2	7	6	2	0	6
16	3	0	8	2	6	0	1	11	4	3	8	0	3	0	0	2	4	0
18	3	5	3	2	9	9	2	2	3	4	1	6	3	4	6	2	7	6
20	3	9	10	3	1	6	2	5	2	4	7	0	3	9	0	2	11	0

TABLE, showing the proportionate Value of Timber, per Load or Foot Cube, and 12 feet 2½ and 3-inch Deals, Planks, and Battens, per 120.

Timber per load.		Timber per foot cube.		11 by 2½ Planks.			9 by 2½ Deals.			7 by 2½ Battens.			11 by 3 Planks.			9 by 3 Deals.			7 by 3 Battens.		
£	s.	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
2	10	1	0	13	15	0	11	5	0	8	15	0	16	10	0	13	10	0	10	10	0
3	15	1	6	20	12	6	16	17	6	13	2	6	24	15	0	20	5	0	15	15	0
5	0	2	0	27	10	0	22	10	0	17	10	0	33	0	0	27	0	0	21	0	0
6	5	2	6	34	7	6	28	2	6	21	17	6	41	5	0	33	15	0	26	5	0
7	10	3	0	41	5	0	33	15	0	26	5	0	49	10	0	40	10	0	31	10	0
8	15	3	6	48	2	6	39	7	6	40	12	6	57	15	0	47	5	0	36	15	0
10	0	4	0	55	0	0	45	0	0	35	0	0	66	0	0	54	0	0	42	0	0
11	5	4	6	61	17	6	50	12	6	39	7	6	74	5	0	60	15	0	47	5	0
12	10	5	0	68	15	0	56	5	0	43	15	0	82	10	0	67	10	0	52	10	0

TABLE, showing the Cubical Contents of 120 2½ and 3-inch Deals, Planks, and Battens.

Length.	2½-inch Planks.		2½-inch Deals.		2½-inch Battens.		3-inch Planks.		3-inch Deals.		3-inch Battens.	
Feet.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
	183	4	150	0	116	8	220	0	180	0	140	0
10	229	2	187	6	165	10	275	0	225	0	175	0
12	275	0	225	0	175	0	330	0	270	0	210	0
14	320	10	262	6	204	2	385	0	315	0	245	0
16	366	8	300	0	233	4	440	0	360	0	280	0
18	412	6	337	6	262	6	495	0	405	0	315	0
20	458	4	375	0	291	8	550	0	450	0	450	0

			s.	d.
Mitre iron bar		per cwt.	14	0
S C ditto		,,	17	6
Rod iron		s.	14	0
Round iron	large 13	small	9	0
Half round ditto ...	ditto 15	ditto	11	0
Hoop iron	common 16	best	14	0
Sheet iron	thick 14	thin	9	6
Do. best charcoal plate ditto	21	ditto	18	0

Price of iron bar, round and square, at per foot run, calculated at 1d. per lb.; for any other price, multiply the undermentioned prices by the value per lb.

Inch.		Square. s.	d.		Round. s.	d.
¼	......	0	0¼	......	0	0¼
⅜	......	0	0½	......	0	0⅜
½	......	0	1	......	0	0⅔
⅝	......	0	1⅓	......	0	1
¾	......	0	2	......	0	1½
⅞	......	0	2½	......	0	2
1	......	0	3⅓	......	0	2⅔
1⅛	......	0	4¼	......	0	3⅓
1¼	......	0	5¼	......	0	4¼
1⅜	......	0	6½	......	0	5
1½	......	0	7½	......	0	6
1⅝	......	0	9	......	0	7
1¾	......	0	10½	......	0	8
1⅞	......	1	0	......	0	9¼
2	......	1	1½	......	0	10⅝

For flat bars, multiply the above prices by the width.

		s.	d.
Columns, including caps and bases, chimney and bearing bars ...	per lb.	0	2
Ties and straps in floors and roofs, including nails and staples ...	,,	0	3
Twisted ditto	,,	0	4
Screw-bolts, nuts, and washers, and king-post stirrups	,,	0	5
Pile shoes, with straps and nails	,,	0	3
Framed grating, including fixing and drain grates	3d. to	0	4
Square balusters	,,	0	4

GALVANIZED IRON.

In sheets, 6 feet by 12 feet.

Gauge.		Weighing, per foot.		per cwt. £	s.	d.
No. 12	....	4½ lb.	....	£1	2s.	6d.
,, 14	....	3¼ ,,	....	1	3	6
,, 16	....	2⅝ ,,	....	1	5	0
,, 18	....	2¼ ,,	....	1	6	0
,, 20	....	1⅝ ,,	....	1	8	0
,, 22	....	1¼ ,,	....	1	11	0
,, 26	....	1 ,,	....	1	15	0

CORRUGATED SHEETS. Best quality.

Wire Gauge.	Sizes of Sheets.	Weight per sq. of 100 feet super., about, Cwt.	qr.	lb.	Sq. ft. per ton, about	Price per ton.	Extra per ton.
No.	SINGLES.	Cwt.	qr.	lb.		£	
16	6 feet by 2 feet, to 8 feet by 3 feet.	3	0	14	800	26	If curved, 10s. per ton.
18		2	1	6	1000	27	If corrugated with small flute, 10s. per ton.
20		1	3	6	1250	29	If step corrugated, 10s. per ton.
	DOUBLES.						
22	6 feet by 2 feet, to 7 feet by 2 feet 6 inches.	1	2	7	1550	32	If in sheets of extra size, £1 per ton.
24		1	0	24	1880	34	Best best quality, £1 10s. per ton.
26		1	0	6	2170	36	Best charcoal ditto, £6 per ton.

Tie and king rods for curved roofs, up to about 30 ft. span, from 20s. to 30s. per set.

Rivets and burrs, 56s. per cwt.

Slating nails, 33s. 6d. to 50s. per cwt.

Ridge capping, 10d. per foot.

Roll capping, 3d. per foot.

Plain sheets, not corrugated, £2 per ton less than corrugated sheets.

	per ton.		
Ungalvanized corrugated sheets, to 20 gauge	£14	0s.	0d.
Ungalvanized corrugated sheets, to 22 and 24 ditto...	15	10	0
Painted corrugated sheets, to 20 ditto	16	0	0
Painted corrugated sheets, to 22 and 24 gauge	£18	10s.	0d.

Painted ridge capping, 8d. per foot.

RAIN-WATER PIPE. Per Yard.

WROUGHT IRON.

2 in.	2½ in.	3 in.	3½ in.	4 in.	5 in.
1s. 2d.	1s. 4d.	1s. 7d.	1s. 11d.	2s. 3d.	2s. 9d.

CAST IRON.

2 in.	2½ in.	3 in.	3½ in.	4 in.	5 in.
1s. 9d.	2s. 2d.	2s. 5d.	3s. 4d.	3s. 11d.	5s. 0d.

Shoes, from 1s. 5d. to 4s. 2d. each.

Elbows, from 1s. 9d. to 5s. 6d. each.

Pipe brackets, 1s. per dozen.

IRON GUTTERING. Per yard.

WROUGHT IRON. Half round.

3 in.	3½ in.	4 in.	4½ in.	5 in.	6 in.
0s. 9d.	0s. 11d.	1s. 1d.	1s. 4d.	1s. 7d.	2s. 3d.

Ditto. O. G. and moulded.

3 in.	3½ in.	4 in.	4½ in.	5 in.	6 in.
1s. 4d.	—	1s. 10d.	—	2s. 4d.	2s. 10d.

CAST IRON. Half round.

3½ in.	4 in.	4½ in.	5 in.	5½ in.	6 in.
1s. 2d.	1s. 6d.	1s. 9d.	2s. 0d.	2s. 6d.	3s. 0d.

Ditto. O. G. and moulded.

3½ in.	4 in.	4½ in.	5 in.	5½ in.	6 in.
—	2s. 0d.	2s. 4d.	2s. 8d.	3s. 5d.	—

Elbows, half round, from 1s. 6d. to 3s. 3d. each.
Ditto, O. G., from 2s. to 3s. 4d. each.
Outlets, half round, from 1s. 7d. to 3s. 4d. each.
Ditto, O. G., from 2s. to 3s. 4d. each.
Plain clips, 10d. each. Lion clips, 1s. each.
Brackets for gutters, 5d. per lb.

RAIN-WATER HEADS. Each.

WROUGHT IRON.

2 in.	2½ in.	3 in.	3½ in.	4 in.
2s. 6d.	2s. 6d.	2s. 9d.	3s. 3d.	3s. 6d.

CAST IRON.

2 in.	2½ in.	3 in.	3½ in.	4 in.
2s. 0d.	2s. 3d.	3s. 0d.	3s. 6s.	4s. 0d.

WROUGHT IRON. O. G. and moulded.

2 in.	2½ in.	3 in.	3½ in.	4 in.
2s. 4d.	2s. 9d.	3s. 0d.	3s. 6d.	4s. 0d.

55. **LEAD** is used either in the sheet or in pipes. It is often much adulterated with zinc, which readily unites with it, and renders it much less durable. It is extensively used for flat roofs, and for covering the angles and gutters of slate roofs; for this purpose it is usually about 7 lb. the square foot; but for "flashings" on the walls, &c., running down and overlapping the turned-up edge of the flat lead, it is not more than 3½ to 4 lb. per foot. Pumps are often of lead, and may be obtained at from £1 15s. to £2 10s. per pump, made up complete; forcing-pumps being higher in cost, according to pattern. Lead is from 27s. to 30s. per cwt.; and for Windsor, about 35s. In pipes it is sold of the following dimensions and prices:—

LEAD PIPES.—(SOUTHWARK.)

27s. per cwt.

IN 60 FEET LENGTHS.

In.	Pipe weighing.	
[illegible]	12, 15, 20, 22, 27 lb.	per 15 ft. length.
[illegible]	18, 22, 27 lb.	ditto
[illegible]	22, 25, 28, 32, 36, 39, 42 lb.	ditto
1	34, 42 lb.	ditto

IN 50 FEET LENGTHS.

In.	Pipe weighing.	
1	32, 36, 60 lb.	per 15 ft. length.
1¼	42 lb.	12 ditto

IN 36 FEET LENGTHS.

In.	Pipe weighing.	
1¼	52, 66 lb	per 12 ft. length.
1½	50, 56, 72, 84 lb.	ditto

IN 12 FEET LENGTHS.

In.	Pipe weighing.	
1¾	70, 81, 90 lb.	per 12 ft. length.
2	84, 96, 115 lb.	ditto
2½	126 lb.	ditto
3	108 lb.	ditto
3½	108 lb.	ditto

IN 10 FEET LENGTHS.

In.	Pipe weighing.	
2½	120 lb.	per 10 ft. length.
3	114, 150, 188 lb.	ditto
3½	135, 150, 184 lb.	ditto
4	135, 160, 200 lb.	ditto
4½	200 lb.	ditto

Lead is either soldered or lapped, the former being used for flats of small dimensions, or for pipes; whilst the latter is the only plan applicable to large flats, in consequence of the expansion and contraction caused by the alternations of temperature.

56. **COPPER** is now chiefly used for small cisterns of great importance, and for some boiling coppers; its high price forbidding its more general use. It is also employed in slating, where the nails made of it are more durable than any other; though even here zinc is supplanting it. The price is about 1s. 6d. to 2s. per lb., according to the workmanship.

COPPER AND COPPER ARTICLES.

	s.	d.
12 oz. copper covering to flats and gutters, including seams, labour, ties, and nails (to be measured on the face when finished), per foot super	1	7
16 oz. ditto	2	0
20 oz. ditto for flats	2	3
For every oz. in weight above or under, add or deduct	0	1
For verandahs, add per foot	0	2

COPPER GUTTERS, per foot run; semicircular wired, complete.

	s.	d.
6 inches girt	1	2
8 ditto	1	6
10 ditto	1	10
12 ditto	2	0

Tinned ditto, 2d. to 3d. extra.
Man's time fixing, extra.
Spike and screw prepared with copper ties, each from 1s. to 1s. 6d.

COPPER PIPES, for rain-water, with moulded rings and tacks complete, per foot run.

	s.	d.
2½ inch diameter	1	5
3 ditto	1	9
3½ ditto	2	1
4 ditto	2	5

Copper cistern heads, from 9s. to 13s. extra.

COPPER PIPES. Per foot run.

Diameter.	Weight.	Price.		Joints, each.	
Inches.	lb.	s.	d.	s.	d.
2	1¼	3	0	6	0
2½	1¾	4	0	6	6
3	2¼	4	4	7	0
3½	2½	4	10	7	6
4	3	5	7	9	0
4½	3½	6	6	11	0
5	4½	8	10	13	0

	s.	d.
Washing coppers, per lb.	1	9
Copper sheet ditto	1	3
Copper speaking-pipe, per foot	0	7

57. ZINC is every day becoming more and more used in building, as its valuable properties become more recognised. In this country, formerly, it was laid in large breadths by soldering the joints, but, inasmuch as it expands more than any other metal, this plan is peculiarly unsuited to it; but by turning it up and rolling it, as practised with lead, it is found to be quite as durable as that metal. Its price is as follows:

ZINC ROOFING.—BELGIAN ROLL.

No. 13 gauge	6d. per square foot.
No. 14 ditto	6½d. "

STRAIGHT CORRUGATED.

No. 13 gauge	7d. per square foot.
No. 14 ditto	7½d. "
No. 15 ditto	8d. "

Italian-formed zinc, same as corrugated.

Curved Italian, including iron frame, £4 5s. per square of 100 ft.

Straight Italian, on timber, the same price.

ZINC AND TIN ARTICLES

Zinc sheets are 7 feet long by 3 feet, and 2 feet 8 inches wide. For flats, No. 15 ought to be used, and for gutters, Nos. 13 or 14.

Malleable zinc, laid with fine rolls, including labour to laying, complete, measured on the girt, per foot super.

Gauge...	No. 10.		No. 11.		No. 12.		No. 13		No. 14.		No. 15.		No. 16.	
Weight, per foot super	14 oz.		16 oz.		18 oz.		21 oz.		24 oz.		26 oz.		30 oz.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Flats	0	5½	0	6½	0	7	0	8	0	9½	0	10½	0	11½
Gutters	0	6	0	7	0	7½	0	8½	0	10	0	11	1	0
Verandahs	0	6½	0	8	0	8½	0	9½	0	11½	1	0	1	1
Corrugated roofs	0	7	0	8½	0	9	0	10½	0	11½	1	0	1	1½
Ditto, including iron ties and stays...	...		...		1	0	1	2	1	3	1	4	1	6

GUTTERS AND RAIN-WATER PIPES, per foot. Exclusive of delivery and fixing.

Diameter.	Gutters.		O G. Gutters.		Pipes, per foot.		Square Heads.		O G. Heads.		Octagon Heads.		Shoe each.	
Inches.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
2	0	2			0	4½	2	3	3	0	4	6	1	3
2½	0	3½			0	5½	2	9	3	6	4	6	1	6
3	0	4	0	4½	0	7	3	3	4	0	5	0	2	0
3½	0	4½	0	5½	0	8½	3	9	4	6	5	6	2	3
4	0	5½	0	6	0	10	4	3	5	0	6	0	2	6
4½	0	6½	0	6½	1	0	4	9	5	6	6	6	2	9
5	0	7½	0	7	1	2	5	3	6	0	7	0	3	0

	10 in.		11 in.		12 in.	
	s.	d	s.	d.	s.	d.
Chimney pipes, per ft.	2	9	3	0	3	3
Suter's ventilating wind guard "	15	0	17	6	20	0
Lobster back ... ... "	7	0	7	6	8	6
Smoke dispensers.. "	7	0	8	0	9	0

Water balls, ½ in., 1s. 6d.; ¾ in., 1s. 10d.; 1 in., 2s. 6d.

Perforated plates for meat safes, 4d. per foot.

58. BRASS is a mixture of copper and zinc, and is only used in door furniture, &c.

SECT. 6.—GLASS.

59. GLASS, as now used, is either plate, patent plate, rough plate, crown or stained. The reduced price of the first of these articles now allows of its very general use, especially as its great strength almost forbids its breaking by any ordinary accident.

GLASS.

(Whitefriars.)

CROWN GLASS (delivered at 1s. 6d. per hour).

Usual thickness, per crate of 18 tables, each of which is a circle of about 6 feet 6 inches diameter, with a knob in the middle, rendering that part entirely useless for all but very common windows, as out-houses, &c.

	£	s.	d.
Best	6	15	0
Seconds	5	10	0
Thirds	4	0	0
Fourths	3	5	0
Coarse	2	18	0

Less 25 per cent. discount.

Extra thickness, per crate of 12 tables.

	£	s.	d.
Best	6	15	0
Seconds	5	10	0
Thirds	4	0	0
Fourths	3	5	0
Coarse	2	18	0

Less 25 per cent. discount.

PLATE GLASS.

Plates per foot super. not above.	Glazing quality. s. d.	Best silvering quality. s. d.
1	1 7	2 0
2	1 11	2 6
3	2 3	3 0
4	2 5	3 4
5	2 7	3 8
6	2 9	3 10
7	2 10	3 11
8	2 11	4 0
9	3 0	4 2
10	3 1	4 4
12	3 2	4 6
14	3 3	4 8
16	3 4	4 10
18	3 5	5 0
20	3 6	5 4
25	3 7	5 8
30	3 8	6 0
35	3 9	6 2
40	3 10	6 4
45	3 11	6 6
50	4 0	6 8
55	4 1	6 10
60	4 2	7 0

FLATTENED CROWN SQUARES.

Cut to size. Per foot.

	Coarse.	4th.	3rd.	2nd.	Best.
10 by 8 ft. and under 14 by 10,	6½d.	8d.	9½d.	11d.	12d.
14 by 10 and under 2 feet,	7½d.	9d.	10½d.	12d.	13d.
2 feet by 2½ feet,	8d.	9½d.	11d.	13d.	14d.
3 feet by 3½ feet,	9½d.	11½d.	15d.	17d.	18d.

Less 25 per cent. discount.

STAINED GLASS. Per foot.

	Sheets. s. d.	Squares. s. d.
Flashed ruby	1 6	1 9
Ditto, blue and purple	2 6	3 0
Green pot metals	1 2	1 5
Other ditto ditto	1 6	2 0
Cathedral glass	0 8	0 10
Kelp glass for staining	0 8	0 10
Red	2 6	3 0
Orange	2 0	2 6
Yellow and lemon	1 9	2 0

Above 16 oz. to a foot, at prices above per lb.

ROUGH PLATE GLASS.

Plates, per foot super. Thickness.

	⅜-in. s. d.	½-in. s. d.	¾-in. s. d.	1-in. s. d.	1¼-in. s. d.	1½-in. s. d.
Not above 20 inches long	0 9	1 2	3 0	4 0	5 0	6 0
" 40 "	0 10	1 4	3 3	4 3	5 3	6 3
" 60 "	0 11	1 6	3 6	4 6	5 6	6 6
" 80 "	1 0	1 8	3 9	4 9	5 9	6 9
" 100 "	1 1	1 9	4 0	5 0	...	...
" 120 "	1 2	1 10	4 3	...	...	...
Above 120 "	1 3	2 0	...	...	...	...

Grinding one side, 6d. per foot (net); both sides, 1s., for all lengths and thicknesses.

CROWN GLASS SQUARES. Cut to size.

Per foot.

	CC.	4th.	3rd.	2nd.	Best.
10 by 8, and under 14 by 10,	3½d.	5d.	6½d.	8d.	9d.
14 by 10, and under 2 feet,	4½d.	6d.	7½d.	9d.	10d.
2 feet, and under 2½ feet,	5d.	6½d.	8d.	10d.	11d.
2½ feet, and under 3 feet,	5½d.	7½d.	10d.	12d.	13d.
3 feet, and under 3½ feet,	6½d.	8½d.	12d.	14d.	15d.

Less 25 per cent. discount.

SECT. 7.—MATERIALS FOR PAINTING, &C.

60. PAINTING consists in covering the groundwork with successive layers of colour, mixed with oil and turpentine, together with some of the dryers given

below. The greater the proportion of oil the more glossy is the face, and the more lasting is the paint. When a large proportion of turpentine is used, the paint looks dull, and has a delicate bloom; this is called "flatting." The prices are as follows:

PIGMENTS.—(Upper East Smithfield.)

White Lead, 8s. 6d. per cask of ¼ cwt.

COLOURS.

Made up in parcels of 7lbs. each, dry.

BLACKS.	s.	d.	GREENS.	s.	d.
Ivory	3	0	Emerald	0	7
Blue black ...	1	0	Mineral	14	0
Lamp black ...	1	9	Green copperas	0	6
			Brunswick grns.	1	9
BROWNS.			PINKS.		
English umber	0	9	Rose pinks ...	3	0
Turkey	1	3	Dutch	1	9
Burnt	2	6	English	1	0
T. D. sienna ...	2	6			
Burnt ditto ...	6	0	REDS.		
Vandyke	2	6	Fine venetian ...	1	0
Purple brown	2	4	Red lead	1	9
Washed ditto ...	4	0	Orange	2	8
Spanish ditto ...	0	9	Indian red per lb.	0	9
			Gen vermilion ..	5	0
BLUES.					
Celestial	1	9	YELLOWS.		
Prussian ...	21	0	Spruce ochre ...	0	9
Com. verditer	8	0	Oxford stone ...	3	6
Refiners' ditto	20	0	Com. chrome ...	4	8
Indigo ... per lb.	5	0	GBST ditto ...	3	9

COLOURS GROUND IN OIL.

Black	per 7 lb.	3	0
Venetian red	,,	2	6
Purple brown	,,	3	6
Wd. purple brown	,,	5	0
Raw sienna	,,	6	0
Burnt ditto	,,	12	0
Common ochre	,,	3	0
Best Oxford	,,	4	6
Raw umber	,,	4	0
Burnt ditto	,,	8	0
Brunswick green	,,	8	0

VARNISHES.

Mahogany	per gall.	12	0
Oak	,,	12	0
Wainscot	,,	12	0
Gold size	,,	12	0
Black japan	,,	16	0
Best carriage	,,	16	0
Paper	,,	16	0
Best copal	,,	20	0

DRIERS.

Sugar of lead	per 7 lb.	4	0
White copperas	,,	3	0
Litharge	,,	2	0
Ground driers	,,	2	9
Putty	per cwt.	10	0
Pomace	per 7 lb.	2	0
Whiting	per cwt.	1	6

		s.	d.
Glue	per cwt.	48	0
Double size and firkin ...	,,	2	6

OIL AND TURPENTINE.

Linseed oil	per cwt.	30	0
Turpentine	,,	32	6

BRUSHES, from 6d. to 2s. 6d. each.

SECT. 8.—PAPER-HANGINGS.

61. THESE ELEGANT DECORATIONS are composed of paper, in lengths of 12 yards by 21 inches wide, called *a piece*. The French papers are made only 18 inches wide. They are printed by cylindrical wooden blocks, the pattern being raised in metal; and each revolution of the block printing one length of the pattern. The more complicated the colours, the more expensive is the pattern, each colour requiring a separate block. For the more expensive papers a lining paper is required, especially for crimsons. The walls should always be stripped of the old paper, if they are previously papered, or rubbed down with pumice-stone, if new, and then well sized. In choosing papers, when economy is an object, short patterns should always be selected, as they match with much less waste than longer ones. When it is required to know the number of pieces which a room will take, measure the circumference, and multiply the feet by 12, and divide by 21, which will give the number of breadths; then take the height of the room in feet, measuring from the cornice to the skirting-board, and allowing for the matching of the pattern; multiply this by the number of breadths; divide by 12, and you will have the number of pieces required.

PRICES OF PAPER-HANGINGS.

		s.	d.		s.	d.
Lining paper	per piece	0	6	to	0	9
Common bed-room do.	,,	1	0	,,	2	6
Superior bed-room, or common sitting-room paper	,,	3	0	,,	4	6
Flock paper	,,	8	0	,,	24	0
Satin paper	,,	6	0	,,	18	0
Imitation gold paper	,,				12	0
Best gold paper ...	,,	20	0	,,	40	0
Marble paper... ...	,,	2	0	,,	12	0

SECT. 9.—SCAFFOLDING.

62. In almost all large towns, poles, ladders, and planks may be hired by the week, for the purpose of making scaffolds. In London the price is much higher than elsewhere.

HIRE OF SCAFFOLD MATERIALS.

	London.	Country.
Poles, each, per week	3d.	1d.
Boards ,, ,, ...	1d.	½d.
Putlogs, per dozen	4d.	2d.
Ladders	6d.	3d.
Block and fall, per day ...	1s. 6d.	6d.

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all practical men. In all cases it is desirable that the mason should contract to find and lay the stone, if possible, or at all events that the same party should do all the sawing and dressing. When this is neglected, there is an endless dispute as to broken stone, &c., and the blame is shifted from the shoulders of one to the other. It is generally easy to contract with the quarry-master to find and lay stone as ordered, at per cubic foot, unless the work is very complicated; and even then he will generally engage to do it, and complete the work much more satisfactorily than in the case where he furnishes sawn stone, to be afterwards reduced by other hands. The same applies to stone floors, window-sills, &c., and to staircases and all other stone work. The rate of wages paid to stone-masons varies more than in any other kind of work, because the work differs so much in quality, as between a highly finished piece of sculptured stone and a rough rubble wall. In London, for ordinary stone work, 6s. to 7s. per day is the usual rate of wages, rising to 8s. or 10s. per day for superior work.

67. Tools used by the mason are the saw, and the wedge and mallet, for dividing into scantlings; and the mallet and chisels, for facing the stone when rough. Besides these he requires a plumb-rule, a square, a bevel, and various surface rules. Chisels are of various sizes and shapes, and are called in London, the pointer, the inch-tool, the boaster, and the broad tool. The first makes a series of narrow furrows, the ridges between which are cut away by the second, while the third makes all smooth; the broad tool works the stone into two different faces, one called *stroking*, the other *tooling*. A stone-axe, or scabling hammer, is also sometimes required for rough work; one end is flat and the other sharp, and by its means rough points, &c., are knocked off, and in some hands, as at Aberdeen, the whole surface is reduced by it to a tolerable degree of smoothness; this is there called *nidging*.

68. IN LAYING WALLS, the footings should be constructed of the largest stones procurable, squared and in regular courses. In ordinary houses the stones in the lowest course should reach across the whole breadth of the wall, or at least every alternate stone should do so; the vertical joints in each course should not lie over the joint of a course below, but should *break joint*, as it is called. The foundation should consist of several courses, called footings, each of which should decrease in width about four inches as they rise; the number depending upon the height of the wall.

69. AN ARCH, in masonry, is that part of a building which is suspended over a given plane, supported only at the extremities, and concave towards the plane. The upper surface is called the *extrados*; the under, the *intrados*; the supports are the *springwalls*; the *springing-lines*, are those common to the supports and the intrados; the *chord*, or *span*, is a line extending from one springing-line to the opposite one; the *height*, or *rise*, of the arch, is a line drawn from the middle of the chord to the intrados; the *crown*, is that part which the extremity of the perpendicular touches; and the parts of the curve between the crown and the springing-line are called the haunches or flanks. An arch under the interior of a building, overtopping an area of a given boundary, as a passage, cellar, or the like, and supported by walls or pillars forming the boundary of the area, is called a *vault*. When a complex vault is formed by the intersection of two solids, whose surfaces coincide with the intrados of the arches, and are not confined to the same heights, it is called a *groined vault*.

70. A MOULD, OR CENTRE, is required for every arch, which is removed or *struck* as soon as the mortar is set firmly, and the weight is equally distributed over the arch. These centres are generally formed of wood by the aid of the carpenter, and so placed as to be supported upon props, which are afterwards knocked away, allowing the centre to drop. In rough arches the mason generally fixes a cross piece of timber, and then builds a temporary stone centre with mortar and rubble, which is removed when the work is completed.

71. THE MARBLE MASON is now little required in housework, except to fix mantelpieces, and other marble work. Most of the work cut and polished in this country is now done by machinery, which competes successfully with hand-labour in this department. It is the best plan in purchasing mantelpieces, to agree for them to be delivered and fixed together with hearth-stone and lining slips when required. In this way the whole cost is known at once, and then there is no necessity for estimating the value of labour in this department of house-building. The same remark applies to slate-slabs and all descriptions of slate, marble, and stone floors, all which should be contracted for *laid*, at per foot superficial; thus doing away with all necessity for looking after the journeymen, and only requiring a superintendent, in order to see that the stones are properly bedded in sand, concrete, or cement. Where such a contract is entered into, provision should be made for the preparation of the surface, either by the party who makes the contract, or by the bricklayer employed in the other work. It should never consist of mere earth filled in, but of burnt clay or broken bricks.

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the amount of which, divided by the number of rods contained in the whole, gives the mean price of a single rod. When the apertures or openings in a building are small, it is not customary to make deductions either for the materials or workmanship, which are there deficient, as the trouble of plumbing and returning the quoins is considered an equivalent to the deficiency of materials occasioned by such aperture. But the most expeditious way of ascertaining the value of stone work is to find the number of cubic feet in the walls, and then to charge at so much per foot. In order to do this a calculation must be made of the prime cost of the stone and mortar, the extra trouble of lifting it, and working it. All these elements vary so much, that it is very difficult to get at a definite price as the exact value of any given stone work.

SECT. 3.—THE BRICKLAYER AND TILER.

74. THE WORK OF THE BRICKLAYER is much more easily measured and valued than that of the stone-mason, because he has to deal with bodies ready fashioned to his hand, and of constantly unvarying forms. In some cases, as in cut and gauged arches, and in rubbed and gauged fronts, the work is considerably increased; but still it is easily known beforehand, and the workman can therefore calculate what it is worth per foot, per yard, or per rod.

75 FOUNDATIONS must be made to rise in a series of level steps, according to the general line of the ground. This insures a firm bed for the courses, and prevents them from sliding; and if it is not adopted, the moisture will induce the inclined parts to descend, to the great danger of fracturing the walls. When bricks are laid in dry weather, they must be wetted or dipped in water as they are laid, to cause them to adhere to the mortar, which they will not do if laid dry. In carrying up the wall, the whole of the various partitions should be carried up together, because as all walls shrink more or less immediately after building, the part which is first carried up will settle before the adjacent part is brought up to it, and, consequently, the shrinking of the latter will cause the two parts to separate; therefore no part of a wall should be carried higher than the level of one scaffold without its adjacent parts being equally carried up. In laying any portion, the ends are regularly sloped off to receive the bond of the next piece of work, and this is done by leaving what are called *toothings*.

76. The order in which bricks are laid consecutively is called *the bond*, of which there are two varieties, English and Flemish bonds; both are composed of bricks laid lengthwise, called *stretchers*; and others at right angles to these, called *headers*. A single layer of bricks is called *a course;* and where bricks are reduced in length or width, to make up a space not so large as a regular-sized brick, they are called *closers;* half a brick is *a bat*.

77. ENGLISH BOND (see *fig.* 2, A and B) is composed of courses of headers and stretchers, alternately, with the occasional introduction of a closer at the quoins (as shown at *c d*). This is the strongest kind of brickwork, though not the most ornamental, and is generally practised where strength is of importance. In all brickwork it is necessary to see that the joints do not range perpendicularly one over the other, but that each shall fall over and under the solid part of a brick, and hence the two edges are held together by the two bodies, as it were, splicing them. This is called *breaking* the joint; and in order to effect this, it is sometimes necessary to cut the brick still narrower than the half, as seen in the woodcut. This is called a *queen closer* (*c*). But this may also be done in the stretching course, by cutting off one-quarter of the length of the brick; the brick so reduced is called a *king closer* (*d*). In all walls of this bond, let their thickness be what it may, it is necessary only to bear in mind the following principles:—1st. Every course is made up entirely of headers *or* stretchers, with the occasional introduction of a closer to break the joint. 2ndly. In every case where a wall is more than half-brick thick, the parallel stretchers in their course must break joint with each other, that is, that the joints must always be opposite the middle of the adjacent brick, except in the case of closers, when the break is 2¼ inches from the joint. FLEMISH BOND (see *fig.* 3) is never used in this country except for ornamental fronts, where its regular appearance is thought by some to give it a great superiority over English bond. It consists of alternate headers and stretchers in each course, with the occasional introduction of a closer to keep up this arrangement. By an examination, however, of the ground-plan (*fig.* 3, D), it will at once be seen that in a wall bonded in this manner, the joints are much less broken than in the English bond, and therefore it is considerably weaker; but for all ordinary building purposes in house-work, there is no doubt that either is sufficient, if put together with good mortar, and care is taken that the headers are really carried through the wall, and are not composed of the half-bricks called *bats*. It is true, that few fronts are composed of the same kind of bricks throughout, and that in most cases the headers are only occasionally carried through, but there can be no doubt

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that the practice weakens the wall greatly, and when large windows are used, and the piers are narrow, the plan is particularly unsafe. I have seen many fronts with only one single full header per square yard, and with the inside half of the wall composed of courses of bricks larger or smaller than the front, and therefore only occasionally corresponding in joint with the front. In such a case the headers can only be carried through when they do correspond, as, for instance, every fifth, sixth, or seventh course.

78. THE MORTAR should be laid as thinly as possible, and with the ordinary brick, so that four courses shall not rise more than 11¾ inches. In ornamental brickwork lime is used without sand (called *putty*), and the joint is then very fine indeed. Sometimes, however, ashes are added instead of sand, making a blue mortar, which has a very good effect. A first-rate workman in laying his bricks, whether using mortar or *putty*, cuts off the superfluous material, and leaves a clean edge; but sometimes this is neglected, and then the joints are either raked-out and filled-in flush with mortar, and coloured together with the bricks (which is a very sorry and unworkmanlike expedient), and called *flat-pointing*, or else a mortar nearly resembling the bricks in colour is used; and upon this a fine line of *putty* is fixed with a tool and cut off quite straight, the work being denominated *tuck-pointing*. In all foundations and in the low walls of houses, liquid mortar ought to be poured upon the surface of each course, or, at all events, every third or fourth course, so as to fill all the spaces and consolidate the wall. This is called *grouting*, and is of great importance in producing sound work. It is, also, a good plan to introduce a layer of slates all round the house, a little above the natural level of the ground, which prevents the damp rising through the walls by capillary attraction. Sheet lead answers equally well, but it is far more expensive. Whichever material is used, it should be laid in cement.

79. The quantities of bricks required, and their measurement, are calculated throughout Great Britain by the rod, which contains 306 cubic feet. All walls, however, are supposed to be a brick and a half thick, and in the rod of reduced brickwork, as it is called, there are 272 feet superficial, which may be included in a square 16½ feet each way. This will require, in ordinary work, 4500 bricks, allowing for mortar and waste, varying with the size of the bricks and joints. A foot requires 17 bricks, and a foot of facing, when the headers are not all carried through, as in Flemish bond, will require only eight bricks. Since the cessation of the duty on bricks, they are often made of a larger size, and when this is the case a corresponding allowance must be made. The same may be said of gauged arches, which are now made of larger and longer bricks than formerly, and which often require 7 or 8 instead of 10, the old number. In the measurement of brickwork, flues are measured as if solid. Timbers inserted in the wall are not deducted. Two inches are allowed for bedding-plates, when no brickwork is over them. All cuttings are measured superficially. Facings of all descriptions are charged extra by the superficial foot.

80. THE TOOLS used by the bricklayer are: first, a trowel for laying the mortar, which he also uses for cutting bricks; secondly, a hammer with a sharp edge, for cutting bricks to a face; thirdly, the plumb-rule, level, and square, which are used for keeping the work true; fourthly, the jointing rule, for setting out the joints in piers, &c.; fifthly, the hod and mortar board, for carrying bricks and mortar, and used only by the labourer, who always assists the bricklayer; sixthly, the line and pins, for keeping his work straight; seventhly, the rammer, crow-bar, and pick-axe, which are used for various heavy jobs. These are all required for ordinary wall-work, but for arches, and for rubbed and gauged work, as well as for cut cornices, &c., the following tools in addition are required: arches are made in rough work of whole bricks, which are set with a considerable rise, and will stand any ordinary weight; when, however, a stronger and better-looking arch is required, the bricks are cut with the hammer until they are thinner at one end than the other, and they are then rubbed on a stone until the surface is quite true; besides this, bricks are often rubbed and gauged until they are all exactly of the same size, and are then used for ornamental fronts, called rubbed and gauged work. In setting all arches, an oblique shoulder is cut in the brick-work on each side, called the *skew-back*. The bricklayer then proceeds to set out his arch on a board, drawing each brick separately upon it; he then selects his bricks, and with his axe he cuts them nearly to the required size, after making a line on the surface about one-eighth of an inch deep. After the axe has effected all in its power, the stone is ground to a true face on the *rubbing-stone*, which is a piece of hard sandstone about two feet in diameter, or rather less. Each separate brick assumes a different shape, and sometimes the brickmaker has a mould for each, but in ordinary work the pencil line on the board is enough. With these tools a good workman is able to effect any description of work, however complicated,

requiring only centring according to the arch, which is prepared by the carpenter.

81. **Steining Wells** is the first part of the bricklayer's art, though generally done by the professed well-digger. It is first necessary to make a centre, consisting of inch boarding, with circular rings nailed on the inside. This is placed in the first excavation, and loaded with bricks arranged round it, when the weight sinks the whole as fast as the well-digger removes the earth. As soon as the centre has sunk below the level of the surface, another centre is placed on the top of the first, and loaded in a similar manner, and so on until the required depth is attained. In this mode a quantity of timber is required, and a cheaper plan is often substituted, in which a circular ring of inch timber is placed on the top of the excavation, and loaded as before, until it sinks three, four, five, or even more feet, when another ring is added, and thus the whole is completed. When the ground is of a clayey nature, the latter method is quite safe, but in loose shifting sand or gravel the bricks are apt to bulge inwards without the support of the centring. Cesspools are built in the same way, and also circular tanks. In this work, a rod of reduced brick-work will require about 4760 bricks.

82. **Drains** are now generally made by laying drain-pipes, which are more impervious than bricks, and nearly as low in price. They are generally cemented at the joints, and are laid either in concrete, burnt clay, or plain soil well rammed. Sometimes, however, there is an abundance of old bricks from chimneys, which are useless except for such purposes, and then they may be used for drains, though they certainly are not equal to glazed drain-pipes. The best form is that of an inverted arch covered over with flat stones or tiles, by which arrangement they may easily be opened and cleaned out when any stoppage occurs. A fall of from a quarter to half an inch per foot is desirable, but even less than this will suffice. All drains should be trapped, especially those which open into the sides of brooks to which the wind has free access, for where a current of air sets with great force into a drain, it will blow its gaseous contents into all the departments near the mouths of its various inlets. A great number of stench-traps are therefore in use, all of which depend upon the greater relative weight of water over gaseous matters. Sometimes a depression or elbow simply is made in the drain to such an extent that it is always full of water, and this answers every purpose. In other modes, a small square chamber is built in the drain, and a stone is projected into it from above; whilst in a third trap, which is placed at the mouth of the drain, there is an inverted bell with a pipe projecting into it from the drain, and covered with another and smaller bell, whose lip projects lower down than the mouth of the pipe, so that all the water has to descend under the one edge before it rises over the other, and thus the mouth of the drain is always hermetically sealed, unless the gas is driven through with a force greater than the weight of the atmosphere. Mr. Jennings has introduced a bell-trap, which is exactly the reverse of the old one, and is certainly not so liable to get foul, as there is no place where a lodgment can occur (see *figs.* 4, 5, 6, and 6,* which are examples of these stench-traps). Air-drains are also used in houses for two purposes, one of which is for the purpose of keeping the walls dry, the other of supplying air to the timbers, and to the fire-places in some houses. In all cases, it is well to lay a two-inch pipe round the outer walls on the top of the footing, and cover this in with broken bricks or rubble of some kind, over which the earth should be well rammed (see *fig.* 5*). These draining-pipes should have a regular fall, however slight, and should lead into a larger drain which has a good outlet.

83. **Bricknogging** consists in laying bricks in the interval of timber frame-work, and is generally only half-brick thick.

84. **Ornamental Work**, including **Cornices**, is now commonly made of bricks, of which good examples are shown in the frontispiece. Bricks are moulded expressly for the purpose, or are cut with the hammer, and finished off by the rubbing-stone.

85. **Tiling** is a branch of bricklaying, and all bricklayers are capable also of doing this kind of work. It consists in laying the tiles on the roof in mortar, taking care to break the joint, on laths nailed at certain distances or *gauges* apart. Plane tiles are laid at five, six, or seven-inch gauges, and pantiles at a ten-inch gauge.

86. **The Tools** used in tiling are the *hammer*, the *trowel*, the *bosse* (a kind of hook for hanging the tiles, &c., on to the lath or ladder), and the *striker* for striking the joints.

87. The **Quantity** of bricks per day which a journeyman and his labourer will be able to lay, depends greatly upon the height of the wall, its freedom from quoins, and the goodness of the bricks. Under favourable circumstances, a good man can lay more than 1000 per day in a straight 14-inch wall, the joints being struck only on one side. The average, however, of ordinary house-work is about 700 per day, taking all kinds of work into the account. This will allow for all openings, chimneys, rough arches, &c.

CHAP. III

TRADESMEN EMPLOYED IN BUILDING, THEIR MANAGEMENT AND WAGES.

SECT. 1.—THE EXCAVATOR AND WELL-SINKER.

63. THE EXCAVATOR, or digger, in London and its neighbourhood, is almost always paid by the cubic yard. The following scale of prices is about one-third more than the average paid in the provinces :—

EXCAVATING. Per cubic yard.

	s.	d.
Excavating ordinary soil, not exceeding 6 feet in depth	0	6
Ditto, in coarse gravel or stiff clay	0	7
Trenching out and levelling foundations, filling in, and ramming ...	0	10
If wheeled in barrow, for every 20 yards	0	2
Carting, per half mile... ... ... 1s. to	2	0

WELL-DIGGING AND SINKING.

For wells above 6 feet, and not more than 30 feet in depth, the following are the charges in and near London. In the country, they may often be done for one-third the money :—

Diam. clear of brick-work, ½ brick rim.		Price per foot in depth.		If 1 brick rim.		Price per foot in depth.	
ft.	in.	s.	d.	ft.	in.	s.	d.
3	0	2	6	6	6	10	0
3	6	3	0	7	0	11	6
4	0	3	6	7	6	13	0
4	6	4	0	8	0	15	0
5	0	4	6	8	6	17	6
5	6	5	3	9	0	20	0
6	0	6	3	10	0	25	0

The above prices do not include the bricks and curbs, but only labour and the tools peculiar to well-sinkers. If the well is more than 30 feet in depth, add 1s. per foot to the price.

64. In all dealings with well-sinkers great care should be taken in drawing up the agreement, so that there shall be no mistake as to the depth which is to be sunk. In most instances it is known at what depth the water lies, and the well-sinker will be able to make an exact estimate of the work which he has to do, and can enter into a contract to sink a well having six or eight feet pound of water, as may be agreed upon. When, however, this is the case, the contract ought to specify beforehand the payment per foot, according to the depth sunk; and this is shown in the annexed table, varying according to the diameter of the well. The number of bricks per foot will not vary, and therefore the whole uncertainty rests in the labour. In some cases the soil is hard, and can scarcely be bored without blasting, and here an extra charge is of course allowable. As it is of the utmost importance to a house to obtain good water, the well should always be sunk before anything else is done, especially as the water from it is generally wanted for mortar in laying the foundations.

65. EXCAVATING for foundations is a much more simple process, and also more easily checked. It is only necessary to take out the ground a little wider than the footings, and afterwards to replace and ram down whatever there is room for, wheeling or carting away the surplus. Laying the drains, &c., is the work of the bricklayer.

SECT. 2.—THE STONE AND MARBLE-MASON.

66. THE STONE-MASON'S art consists in cutting stones, and building them into a mass, with or without the aid of mortar or cement. His chief business is to prepare the stones, make the mortar, raise the wall according to plan, and to construct such arches or vaults as may be desired. A wall built with unhewn stone, is called a "rubble wall," which is either coursed or uncoursed. In coursed rubble walls the stones are dressed with the hammer and gauged; they are then thrown into heaps, one for each separate gauge, and the courses are made one from each heap in succession. In uncoursed rubble, the sharp angles only are knocked off with a "scabling hammer." Walls are often built with a facing of *ashlar*, or sawn stone, backed with rubble or brick-work. When brick is used, the stone is either half or a whole brick thick, so that a bond is obtained between the two portions of the wall. In spite of every precaution, such walls are liable to become convex on the outside, from the variation in the joints, and the difficulty of placing the mortar in such equal quantities in the two divisions, as to shrink in equal proportions. All vertical joints after receding about an inch with a close joint, should widen gradually at the back, thereby forming a hollow space of a wedge-like form, for the reception of mortar, rubble, &c. In laying ashlar, the mason should always take care that each stone is placed so as to lie in its natural bed, that is, the same sides should be presented upwards and downwards as in the quarry. This precaution is the result of numberless observations, and considered necessary by

balconies and skirtings, he requires the *shaving tool*, together with some chisels, gouges, files, and rasps. The *scantle* is merely a piece of lath with a nail in the end, by which the width and length of the slates are gauged, the nail making a mark where the slate is too wide or too long. After passing this ordeal, the *saixe* is used for taking off the superfluous edge. It is made of tempered iron, somewhat like a *bill-hook* in shape, being, in fact, a large knife, sixteen inches long, and two inches wide, bent at one end, with a wooden handle at the other. On the back there is a projecting tooth of iron, which is used to make the hole in the top of the slate to receive the nail which fixes it to the batten. The *ripper* is only employed in repairing old slating; it is about the same length as the saixe, with a thinner and narrower blade, and terminating in a round knob on each side. It has also two small notches in the two angles; the handle is raised above the blade by a shoulder, enabling the workman to get a good hold. When used, it is thrust up under the slates, so that the round head catches the nail in the little notch, and thus enables the workman to draw it out, whilst at the same time the slate is released, and may be drawn out, and another substituted in its place. The *hammer* only slightly varies from the ordinary tool; it has one flat or hatchet end, and another round one for driving the nails; the former is also furnished with a claw, for drawing the nails when improperly driven.

90. SLATING is effected as follows:—In the first place, the slater, in good work, has a floor of evenly-laid boards prepared for him. If this is not done, he himself nails a series of battens, which are deal strips about 2½ inches by three-quarters or sometimes 3 inches by 1. These for duchesses are laid about 11 inches apart, so as to receive the nails in regular order; but for countesses they must be nailed two inches closer. Besides the boards and battens, slips of wood, called *tilting fillets*, are used, which are 10½ inches wide, and three-quarters thick at the upper edge, from which they are reduced to nothing at the lower edge. These are nailed down all round the eaves, and also at the hips and ridges, so as to form a steady bearing for the slates. He next strains a line along the edge or eaves, and to this he lays his front tier of slates, nailing them to the battens as he goes on. After this he inserts under each joint a slate not quite so long as the full size, using broken slates of about three-quarter lengths for the purpose. These are retained in position without nails by the mere weight of those above them. After this another line is stretched one inch, or sometimes only half an inch, below the centre of the slate, and to this the next row of slates is ranged, nailing them as before, and taking care that their perpendicular joints are over the middle of the slates beneath them. In this way the whole roof is covered, and so, that in no part is there a space or crevice for the rain to get in. Without at least an inch lap, driving rain will make its way through slates, even with all the care in the world in plastering the joints underneath. Patent slates are laid from rafter to rafter, and are merely butted against each other without lapping at any of the perpendicular joints, but only on the transverse ones, which lap about 2 inches. The perpendicular joints are then covered with fillets of slate about 3 inches wide, set in putty, and screwed down to the rafters. The hips are generally covered with lead, which overlaps the slates; but sometimes in octagon ends they are covered with fillets of slates, set in putty, as described for the patent slate. Sometimes slates are laid in a lozenge form, but it is not nearly so good a plan as the ordinary way.

91. SLATER'S WORK is measured and reduced into squares containing 100 feet superficial. If in measuring the slating on a roof, it is hipped on all sides, with a flat on the top, and the building is of a rectangular shape, add the length and breadth of the eaves, and the length and breadth of two adjoining sides at the flat together; multiply the sum by the breadth of the slope, and the product will give the area of the space that is covered. To this add six inches round for the eaves, and four inches for the hips, and the result will be the proper chargeable area. All slate balconies are charged by the foot superficial.

The net cost of SLATING per square is as follows:—

	£	s.	d.
100 Ducheses, at £11 10s. per 1200...	0	19	3
Battens, 100 feet	0	4	0
Copper and iron nails...	0	1	0
Labour and mortar	0	6	0
	£1	10	3

The labour will vary much, according to the size of the roof and the number of hips, &c.; but the above may be taken as the average in and near London.

SECT. 5.—THE SAWYER.

92. These gentry are the most unmanageable of all, and few are able to cope with their subtleties. It appears very easy to calculate their work, but they always meet an objection to a charge with some allowance or custom, and thus escape under the

Fig. 7

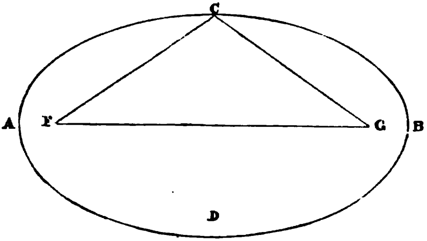


Fig. 8

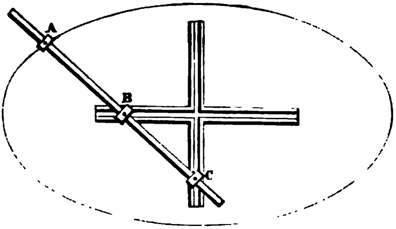


Fig. 9

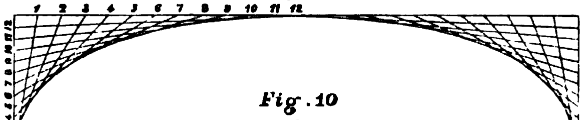
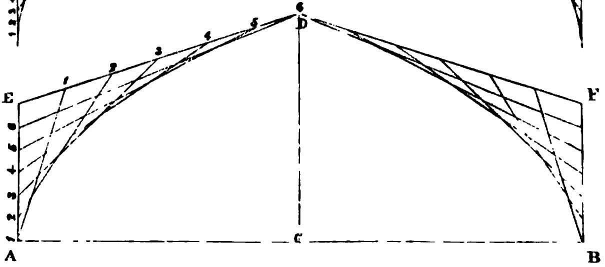


Fig. 10



RULES FOR THE SETTING OUT OF ARCHES. P. 31.

on which draw a perpendicular (C D); make this equal to the height, and A C, C B each equal to half the span. Then draw perpendiculars at A and B two-thirds of the height of C D (more or less, as the case requires), and connect their extremities with the point D. Lastly, divide the sides A E, E D, D F, F B into equal parts, and connect as in *fig.* 9.

97. NAKED FLOORS are of three kinds:—single, double, and double-framed. Single floors (see *fig.* 11) are composed of a series of joists or strong timbers (A), which extend from wall to wall, and support the flooring-boards (B), which are laid across them, as well as the laths beneath. The proper scantling for these joists depends upon their length, and the following table is proportioned to this varying element:—

Length.	Width.	Depth.
6 feet	2 inches	6 inches.
8 "	2½ "	7 "
10 "	2½ "	7 "
12 "	2½ "	8 "
14 "	2½ "	9 "
17 "	2½ "	11 "
20 "	3 "	12 "

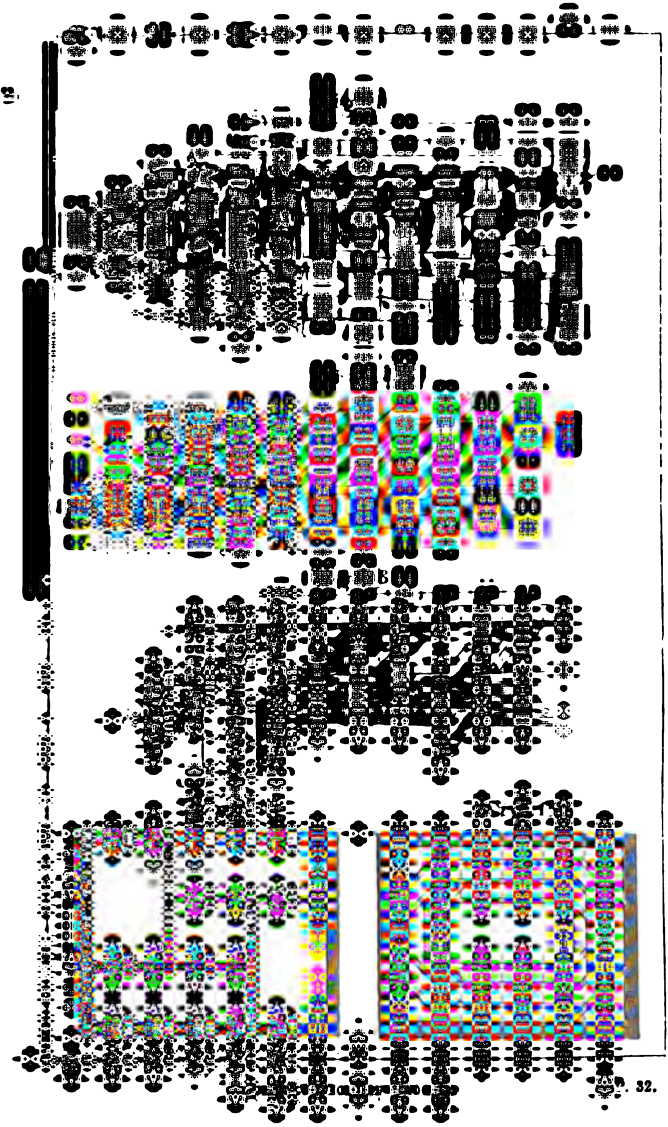
At the part where the chimney occurs it is necessary to arrange the joists, so that they shall not run into that part of the wall. To avoid this, two or three joists are cut shorter than the rest, and, instead of running into the wall, they are framed into a cross piece of timber parallel with the wall, and called a *trimmer*, which, again, is framed into the nearest joists. It is generally necessary to make these two half an inch thicker than the rest, but this is not always attended to. The whole is called *trimming*. Wherever the joists are more than 7 or 8 feet in length they should be rendered stiff by *struts* of some kind or other. Iron rods are now very generally used for the purpose, which pass through each of the joists. When these are not used, *herring-bone* strutts are introduced, which are pieces of inch-stuff, old or new, strained obliquely from one to the other, and crossing one another. The joists are all laid upon a wall-plate, which is bedded in mortar, and laid on the wall on a perfect level, and each joist being notched into it.

98. A DOUBLE FLOOR is composed of three tiers of timbers, namely, the binding joists, A A; bridging joists, B B; and ceiling joists, C C C (see *fig.* 12). The first of these are the chief supports of the floor, the second being merely subsidiary to them, and either lying on them or notched into them. When a double floor is required for a floor of more than 18 or 20 feet span, it requires the introduction of a third set of timbers, called *girders* (see *fig.* 13 A). Neither of these, however, are much used in ordinary house-building; but sometimes girders must be inserted over openings, as folding-doors, &c., and then they generally require to be trussed, that is, to be converted into arches, by the introduction of ties. *Fig.* 16 shows a trussed girder. It is first cut into halves longitudinally; one or two *trussed posts*, A A, and two *abutment pieces* of wrought iron are then inserted, and connected together by two *struts*, which may be either of iron or of oak.

99. TWO OTHER KINDS OF FLOORS may be enumerated as sometimes desirable, when old timber of short lengths is to be worked up. By these modes a floor may be made of timbers, none of which are long enough to reach from wall to wall (see *figs.* 14 and 15). In the plan shown in *fig.* 15, it is necessary to insert very strong wall-plates, so as to prevent the outer joists from giving way, and to strap their angles strongly together with iron. In all cases of floor-laying, the carpenter should be careful to level to the upper surfaces of his joists, which he does by notching their lower ends slightly into the wall-plates, and taking out for this purpose more or less as required. These wall-plates should, in general, be of the substance of a brick, so as to occupy the space of a row of them.

100. Through all floors, without some precaution, the sounds made in the room are easily heard above and below, and to remedy this inconvenience *sound boards* are introduced, upon which mortar and chopped hay are spread about an inch and a half thick, called *pugging*. These sound boards may be of any rough stuff, and are laid upon the ceiling joists in double floors, and upon ledges composed of strips nailed against each joist in single floors. The latter is not a very workmanlike mode of forming sounding boards, but it answers very well for ordinary purposes; and so long as the spike-nails are kept out of the damp, they will hold the strips firmly in their places (see *fig.* 38, in which, however, slates are used instead of boards).

101. BOND TIMBER is introduced in building walls, for the purpose of tying them together, in a longitudinal direction. It was formerly the practice to use these aids very extensively, but as it is found that either by damp or by fire they are much more rapidly destroyed than bricks, their place is now occupied by hoop-iron, which is not so liable to destruction by these elements. Many old walls may be seen which are quite sound, except in parts where bond timber has been used, and would continue so for many a year longer;



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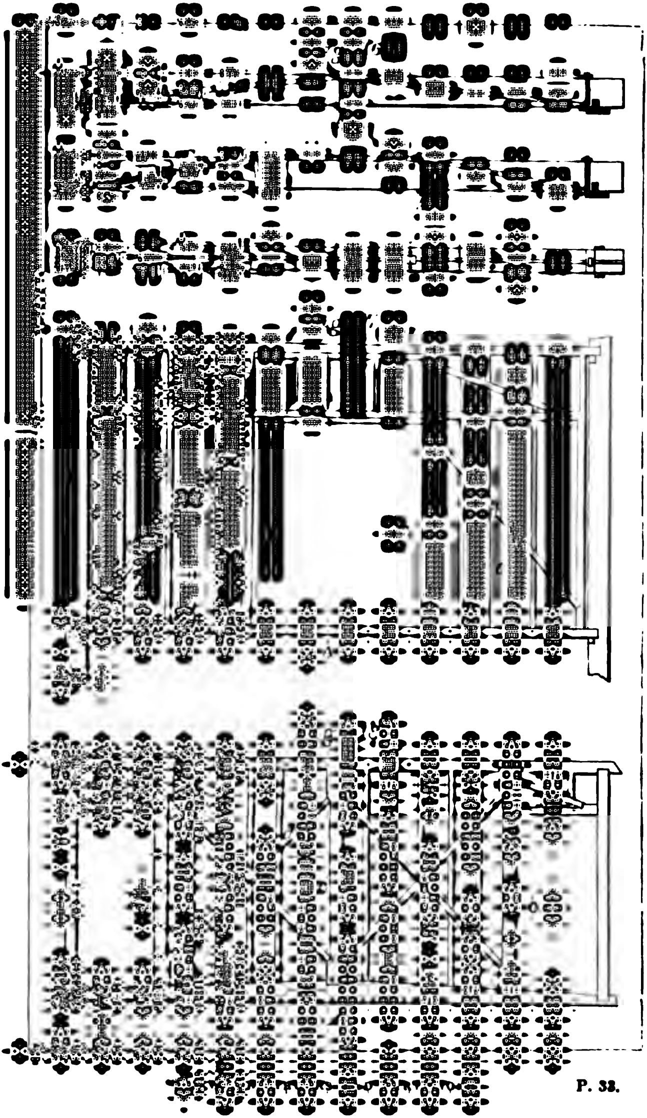

P. 38.

Fig. 19

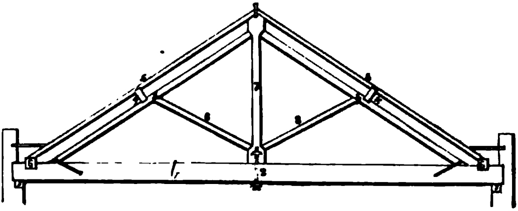

Fig. 20

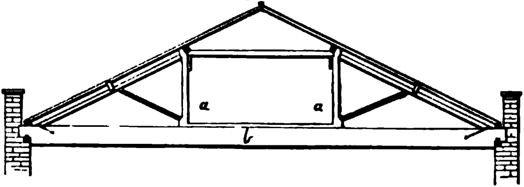

Fig. 21

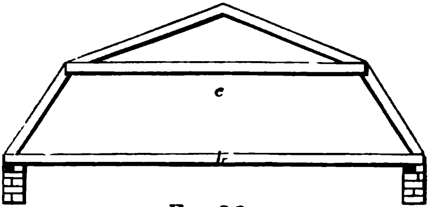

Fig. 22

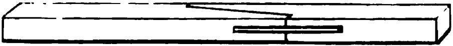

Fig. 23

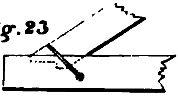

Fig. 24

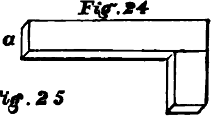

Fig. 25

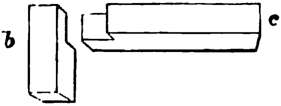

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Fig. 19

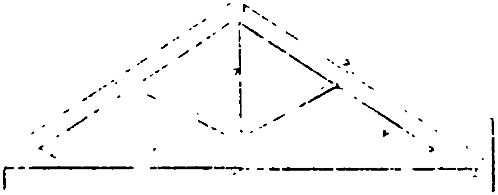


Fig. 20

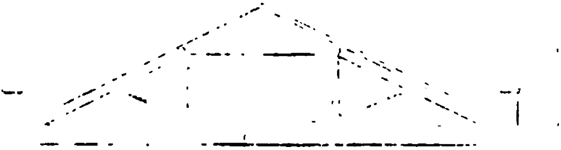


Fig. 21

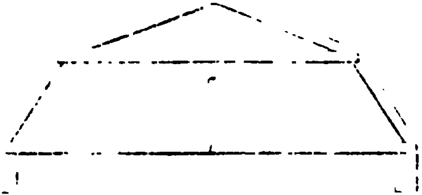


Fig. 22

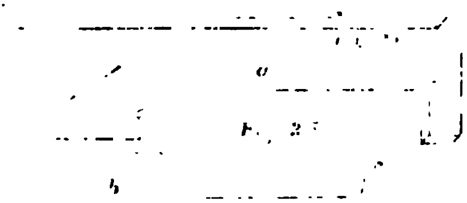


Fig. 23

but wherever this material has been used, its place is occupied by only a shred of worm-eaten wood, ready to rise into dust on the slightest agitation. Bond timber, when used at the angles of walls, should always be notched in such a way as to act as a tie both ways, when the weight comes on. This is effected by cutting the notch deeper at the shoulder than at the extremity in each piece. *Lentils* are pieces of timber which are laid over and across doors and other openings, and they have usually a rough arch turned over them. They should never extend into the outside face of brick or stone work, but should abut against an arch made of one or other of these materials.

102. Framed Partitions, in house work, are almost always made of timber 4 inches by 3 inches, which is commonly called *quartering*. They are introduced where there is no wall under, and are generally lathed and plastered, and the intervals either filled up with sawdust, poured in from the top, or with bricks called *brick-nogging*. In either case, the weight is considerable; the timber alone of a square of quartering being several hundredweights, and when bricks are introduced it is of course greatly increased. To obviate the *sagging*, or bending, which would otherwise occur, these partitions are either trussed or, when they occur in the highest story, they are often suspended from a principal, which, being trussed, bears the weight with ease. The annexed forms of partitions are the most common, and provide for the introduction of a door, either in the middle or in the side. (See *figs.* 17 and 18, in which A A is the sill; B B, the head; *c c c*, the posts; *d d d d*, the braces; *e e e e*, the studs, which are generally fixed 18 inches from centre to centre, so as to take a three-feet lath).

103. Roofs are the most complicated parts of carpentry, and often exercise all the ingenuity of even a skilful workman. They are made in a great variety of forms, to suit all the varying areas which are to be covered, and they are composed of the following pieces of timber, or several of them combined together:—

1st. Wall Plates (1 1, *fig.* 19) are pieces of timber, generally four inches by three inches, laid on the wall to distribute the force of the roof, and to bind the walls together. They are sometimes called *raising plates*.

2ndly. The Tie-beam (2 2), a horizontal piece of timber connecting two opposite *principal* rafters. Its object and use is twofold; viz., to prevent the walls being thrust out, and also to support the ceiling-joists. When placed some distance above the bottom of the rafters, it is called a *collar beam*.

3rdly. The Principals (3 3), or principal rafters, two strong pieces of timber in the sides of the truss, supporting, by means of the next following piece, the whole framework of common rafters upon which the covering rests. These principals are trussed in various ways.

4thly. The Purlines (4 4), longitudinal pieces lying upon the principals, and notched into them.

5thly. The Common Rafters (5 5), ranged at equal distances from each other, and extending from the ridge of the roof to the pole-plates.

6thly. The Pole-plates (6 6) rest on the ends of the tie-beams.

7thly. The King-post (7 7), an upright piece of timber, framed into the principals at the upper end, and into the tie-beam below. The object of this piece is to support the tie-beam, which it does by means of the screw-bolt, which is indicated by dotted lines at 2.

8thly. A Strut (8 8) is inserted on each side between the bottom of the king-post and the middle of the principal, just under the purline, whose weight they are intended to support. The whole piece of frame-work, consisting of the principals, tie-beam, key-post, and struts united together, is called a truss.

104. Besides those parts which are common to every roof, there are also others which are only occasionally introduced, and in roofs of large span more especially. Therefore, instead of the king-post, queen-posts are sometimes used (see *a a*, *fig.* 20), which are raised direct to the middle of the principals from the tie-beam, and their upper ends are connected together, and at the same time kept apart, by a *straining-beam*, while below they are furnished with a *straining-sill* for the same purpose.

105. The Various Forms of Roofs are:—1st, the *lean-to*, or *shed-roof;* 2nd, the *truncated roof;* 3rd, the *hipped-roof;* 4th, the M *roof;* 5th, the *dome;* and 6th, the *curb roof*. The lean-to is the most simple form, and merely requires a wall-plate; or, in addition, if the rafters are more than eight or nine feet long, a purline and a *ridge-board;* to these the rafters are nailed in the usual way. Truncated roofs are made with queen-posts, and must have a lead flat at the top. Hipped-roofs require a principal at each hip, which must be trussed if of more than 10 or 12 feet in length. The M roof consists of two separate roofs, each containing its proper trussed principals, and abutting upon a central gutter-board, which must be lined with lead, before the roofing is applied. Domes are

constructed from arched timbers all meeting in a common centre, and supporting one another. Curb roofs (see *fig.* 21) are employed chiefly in small town-houses where increased chamber accommodation is wanted without raising the wall higher than necessary. The tie is confined to a beam in the floor, and to a counter beam (*c*) introduced where the angle is made. Each of these may be trussed if the span requires it. For small roofs of less than 10 or 12 feet of span, where economy is an object, principals are dispensed with, and a purline is thrown in from wall to wall, upon which the rafters are placed, and a ceiling joist spiked against them. It is, however, only fit for rooms where the goodness of the ceiling is not an object.

106. The Pitch of Roofs must be proportioned to the material which is to cover it, tiles requiring a higher pitch than slate, and this latter greater than copper or lead. The following table gives the pitches proper for each material:—

Proper Pitch of Roofs.

Kind of Covering.	Inclination to the Horizon.		Height of Roof in parts of its Span.	Weight of a Square.
	deg.	m.		lbs.
Zinc	3	50	1-48	100
Copper ...				100
Lead				700
Slates, patent ...	22	0	1-5	1120
„ duchesses	26	33	1-4	900 to 500
Stone slate ...	29	41	2-7	2380
Plane tiles ...	29	41	2-7	1780
Pantiles	24	0	2-9	650
Thatch	45	0	1-2	...

107. The Truss proper for the ordinary house roof is the king-post truss (*fig.* 19), which is adapted to any roofs of not more than 30 feet span. As the posts and principals are screwed into the tie-beams with great force, it is obvious that the screws should always be inserted in the direction of the strain upon them, because iron is capable of a much greater cohesive power in the direction of its length than in that of its breadth (see *fig.*).

108. The Scantlings proper for roofs of ordinary sizes are as follows:—

Span of 20 feet,

Tie-beam.	King-post.	Principal.	Struts.
in. in.	in. in.	in. in.	in. in.
9 by 4	6 by 4	8 by 4	4 by 4
Span of 25 feet,			
10 by 5	7 by 4½	8 by 4	5 by 4
Span of 30 feet,			
11 by 6	8 by 6	9 by 4	5 by 4

Span of 30 to 45 feet,

Tie-beam.	2 Queen-posts.	Principals.	Straining-pin.
in. in.	in. in.	in. in.	in. in.
11 by 6	6 by 4	8 by 4	7 by 4

Purlines. in. in.
6 feet long require a scantling of 6 by 4
8 „ „ „ 7 by 5
10 „ „ „ 8 by 6
12 „ „ „ 9 by 7

Common Rafters. in. in.
8 feet long require a scantling of 4 by 2½
10 „ „ „ 5 by 2½
12 „ „ „ 6 by 2½

109. These several roofs are put together by the carpenter, by the aid of his various tools, with which he cuts out the mortises necessary to receive the different parts; as, for instance, the ends of the king and queen-posts, which are tenoned into the tie-beam, and screwed there by means of iron bolts, on the principle of bed-screws, whose female nuts are dropped into sockets cut in the sides of the posts exactly to receive them. The roof should always be put together on the ground; and then all its several parts are marked and taken to pieces again, in order to be raised to their proper places on the walls. To an inexperienced builder this operation seems a very hazardous one, and so it really is, if incautiously attempted. In a tall house, when the walls have not long been built, the mortar is so yielding that they will sway considerably before they are braced together by the tie-beams, and till these are up they can scarcely be considered safe from all danger of falling in or out. The whole truss (including the tie-beam, king-post, struts, and principals) is usually lifted bodily up to its place, because the act of screwing up the bolts is not easily effected on the top of a newly-built wall. When these are safely fixed, the purlines, pole-plates, and ridge board are added, and then the common rafters may be spiked down at the carpenter's leisure, taking care to build the walls carefully up to the purlines so as to support them.

110. The stair-carriages, in the usual way, are fixed by the man who undertakes the staircase, or, at all events, under his superintendence, though they are measured and paid for on the same principles as ordinary carpenter's work, that is, unless they are included in the contract for the staircase as a whole, which is the best arrangement. They are framed and inserted in the wall, exactly in the same manner as the other joists; but, as they require to be fixed at particular distances, and often at varying angles, as in geometrical staircases, the

ordinary carpenter is not capable of effecting this.

111. General Remarks on Framing.—Sometimes the timber to be used is not long enough for the purpose to which it is to be applied, and then two pieces must be *scarfed*, or united together so as to form one continuous plane. It is clear that it is impossible so to unite them as to make them as strong as if composed of a single piece, and, consequently, the art of the carpenter is exercised in avoiding more weakening of the whole than is inherent of necessity in the act itself. Every two pieces thus joined require some force to compress them equally, and for this purpose iron bolts are used, which act as a tie, and as the cohesive power of iron is great and the hole in the wood is small, the timber is not diminished in strength in that respect. If wooden pins are used, the bore being larger, the timber must be more or less weakened. *Fig.* 22 represents the ordinary mode of *scarfing*, which is sufficient for all common purposes. When it is found necessary to introduce *iron straps*, considerable attention must be paid that the strain upon them is in the right direction; and this is more especially necessary in the strap which connects the foot of the principal with the tie-beam. As often fixed, it binds down the rafter, but does not confine it from thrusting outwards; and to effect this latter purpose, it should be placed further back on the beam, and have a bolt through it to allow it to turn round; it should grasp the rafter close to its foot, where it should be notched in. This is shown in *fig.* 23, in which also the proper form of the tenon is given. When pieces of timber merely abut on one another at their ends, and their tendency is to thrust towards each other, no joint is necessary. When bond timber or wall-plates meet at an angle, the best joint is that shown in *figs.* 24 and 25, in which *a* shows the two pieces united, and *b c* each of them cut ready for joining. When timber stands in a horizontal direction, it is liable to bend by its own weight, called *sagging*; and when this is increased by an extra load, it is still more liable to give way. No beam ought to be trusted for any length of time with more than one-third or one-quarter of the weight which it will break with.

Sub-sect. B.—Joinery.

112. Joinery comprises the art of employing wood in the external and internal finishing of houses; it demands the strictest attention both of the workman and of the superintendent, for on its proper execution depend in great measure the future comfort and health of those who inhabit them. Great care is required in the selection of the timber, which should be of good quality and well seasoned; and the skill and experience of the workman are equally taxed in putting the materials together, so as to avoid those twistings of surfaces and openings of joints which are so commonly seen. In large towns, timber is now desiccated in great quantities, by those who also reduce it into small scantlings for the joiner's use; and this is of great service when time is an object. Nevertheless it should be known, that however dry timber may be before it is planed, it will also shrink still more after that operation, and will also often cast or twist considerably in addition. In the country, where this process cannot be accomplished, the timber should be still more thoroughly seasoned, and should never be used without either having been submitted to the warm air near an oven for some time, or else to the whole of a summer's sun. After it is *tried-up*, as it is termed (that is, framed loosely together in-doors, &c.), it should remain for three months, if possible, before it is glued-up, during which time it will shrink to its full extent, if kept in a dry place, and will afterwards be sure to stand without the joints opening. With a knowledge of these facts, therefore, it behoves every person who intends to build, as soon as he knows what he will want, to take care and lay in a stock of proper timber suited to the joiner's work, cut into proper thicknesses, and ready for his use. These should again be framed and *tried-up* as soon as they are dry enough, and may then remain for the joiner to *glue-up* and finish off at his leisure. Flooring boards can scarcely be too soon planed and stacked in the dry, as they shrink very considerably after planing; and all the doors and windows should at once be cut out and framed. In outside work, white-lead is used in the joints instead of glue.

113. The Tools of the Joiner are so numerous, that it is out of the question to do more in this book than allude, in a cursory way, to those most common, and to their mode of employment. They may be enumerated as, 1st, machinery for holding parts together or in place—viz., the bench, the cramp, the mitre-box; 2ndly, tools for dividing, as saws, chisels, hatchets, adzes, and the like; 3rdly, smoothing tools, as planes, spoke-shaves, rasps, and straight-edges; 4thly, boring-tools, as centre-bits, gimlets, and awls; 5thly, measuring tools, as rules, squares, scribes, bevels; and 6thly, hammers and mallets.

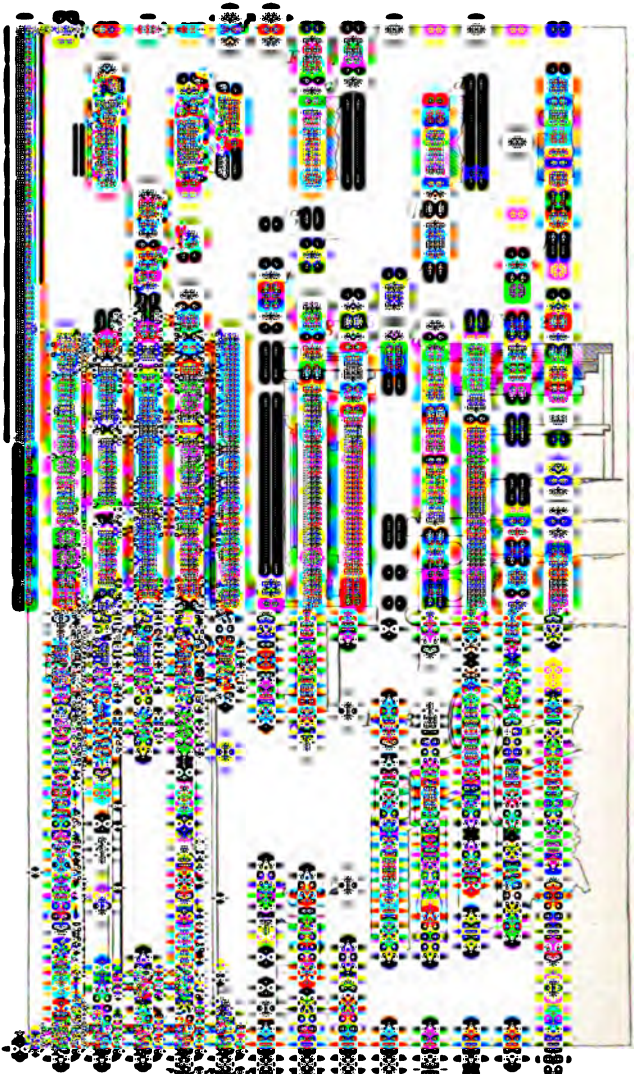
114. The Bench is a long and strong wooden table, 10 or 12 feet long and 2 feet 6 inches wide. On one side there is a vice

made of wood also, and called the bench screw. On the surface there are one or two square wooden plugs, which are capable of being raised or depressed by a blow of the mallet, and which serve to hold the board in its place while the plane is being worked. The Cramp is merely a long wooden or iron rod, with two arms standing out from it, which are capable of being brought nearer to each other by turning a screw. This is intended to press and hold together wide and flat objects, such as doors, window-frames, &c. The Mitre-box consists of a board, having on its surface a raised piece of wood of the exact angle of the mitre to be cut; and thus, by laying a piece of wood alongside of it, the saw is guided so as to cut all exactly alike.

115. Saws are of various kinds, but all act by means of teeth, more or less fine, cut in a thin plate of steel. The Ripping-saw has large teeth, and is intended to cut through the fibre of the wood rapidly in a longitudinal direction; a modification of this is the half-ripper, having finer teeth. The Hand-saw is still finer in the teeth, and is used for general purposes. For dividing wood across the grain a saw with a finer set of teeth is used; and it seldom being required to cut large scantlings, has a thin blade, set in a strong back of brass or iron; this is called a *tenon-saw*, and there are various sizes of it, adapted for sash-work, dove-tails, &c. Besides these, there are various saws for cutting circular work, which are long and narrow, with teeth more or less coarse, and without backs. Their names are the *compass-saw*, the *turning-saw*, and the *key-hole saw*. The Hatchet is a tool having a long handle and a cutting edge parallel with it. The *adze*, on the contrary, has its edge at right angles with the handle. Both of these tools are used for dividing wood, but they do not effect this purpose without greater waste than is occasioned by the saw, and they are therefore only used for rough purposes, or for removing small portions at a time. Besides these, Chisels and Gouges are also extensively used in dividing and removing portions of wood, the former having a straight edge, whilst the latter is more or less concave, and takes a scoop out at every cut. The variety of chisels is very considerable, some being used with the hand, as the *paring-chisel*, while others require the aid of the mallet, as the *mortise-chisel*. The *drawing-knife* is a chisel with an oblique edge, which is used for numberless purposes connected with the dividing of the ends of tenons, &c. It, like the *spoke-shave*, is capable of an almost indefinite extension of power, and the two together will alone render a clever workman capable of effecting most kinds of work, when aided by ordinary saws and planes.

116. Planes, are tools for smoothing the surface of woods, and for cutting mouldings of every variety of pattern, so long as it is without a break. Of these, a portion called *bench planes* are used for planing flat surfaces, beginning with the *jack plane*, which takes off the rough, and ending with the *smoothing plane*, which finishes off the surface and takes out the slight marks left by the others. The intermediate planes are of various sizes, and are used for getting the surface very level and true, called *trying up*, and for procuring a *straight edge*, called *shooting*. When a concave surface is to be smoothed, a *compass plane* is used; and when the concavity is from side to side, as in a groove, the *fork-staff plane* is selected for the purpose. *Rebate and plough planes*, again, are employed to cut grooves in the wood; the former leaving a two-sided groove in the edge, called a *rebate*, while the latter makes a *groove* having three sides, and the operation is called *ploughing*. *Moulding planes* are of an infinite variety of forms, which it would be impossible fully to describe here. *Spoke-shaves* are on the same principle as the plane, but the box in which the blade is set has two handles, one of which is held in each hand. It is a very useful tool, and when employed by an expert workman is capable of producing very good results. *Rasps and sand-paper* finish off more smoothly what inequalities have been left; and the *straight-edge* is merely a board of hard wood, which has been planed to a very true edge, and is used to try the correctness of the surface, to which it is applied. Thus, in planing or trying-up a wide board, it is necessary to ascertain if the whole surface is a perfect plane, and if it is so, the straight-edge will correspond exactly with the surface, in whatever direction it is applied. On the other hand, if there is any inequality, the plane is re-applied until it disappears.

117. Boring Tools are the simplest of all the sets used by the joiner, and their principle is nearly the same, whether they are made in the shape of the *centre-bit* or the *gimlet*. The former consists of the *stock*, which is a wooden handle capable of being worked round and round, and the *bit*, which is of iron, has a central point and two bent teeth sharpened to a point also, which revolve round the centre and cut out all the wood to which they reach. The *countersink* and *rimer* are variations of the same principles, the former being for the purpose of widening the outside edge of a hole, while the latter enlarges the interior. *Brad-awls* are too well known to need description.



37—40.

118. The ordinary rule is usually a two-feet rule, with a brass rod concealed in one arm capable of extending the measure to three feet; besides which, rods are wanted for setting out the work in hand exactly, and the feet are marked upon strips of deal for the occasion. SQUARES are of all sizes, but usually with one arm of iron. SCRIBES are small wooden rods, in which a sharp pin is fixed, and having a moveable shoulder fixed by a wedge, so that a line may be easily marked exactly parallel with the edge to which the shoulder is applied, and at the distance at which the latter is fixed by the wedge. BEVELS are tools somewhat like the square, but hinged so that they retain the angle at which they are set. The joiner is thus enabled to carry off the measure of the angle which he has to fit, and by applying the bevel to his work he can readily avoid loss of time.

119. MALLETS AND HAMMERS are too well known to need description.

120. MOULDINGS (see *fig.* 26) have been already alluded to as the result of the use of a plane for the purpose. They are either worked upon strips of wood and then mitred and stuck by means of brads into the angles between the rails and panels, or else they are worked upon the rails themselves. The former plan is by far the least trouble, and is generally adopted in all work which is to be painted, while the latter plan is necessary for mahogany or oak doors, or window sashes, or for shutters or other similar work. The ordinary mouldings are as follows:—1st. the *bead*, a mere rounded edge; 2ndly, the *quirked bead* (*fig.* 26 *a*), which is a bead ending in a sharp groove; 3rdly, the *bead and double quirk* (*fig.* 26 *b*), in which there is this same sharp groove on each side the bead wrought on the angle of the stuff; 4thly, the *double bead and quirk* (*fig.* 26 *c*) consists of two beads, separated by a quirk or sharp-edged groove. Mouldings, in general, are separated from each other by narrow planes, at right angles to one another, and called *fillets* (*fig.* 26 *d*), the divisions being called *members*. A semi-cylindrical moulding rising from a plane parallel to the face, and terminated on the edge by a fillet, is called a *torus*, being distinguished from the *bead* by the fact that the outer edge terminates with a fillet (*fig.* 26 *e*). A series of semi-cylindrical mouldings constitute what is called reeds. Besides these, there are four mouldings very commonly used, and called respectively the *ogee* and *ogee reverse*, the *ovolo* and the *quarter-round* (*fig.* 26 *f g h i*).

121. DOORS are framed in various ways, from the common ledged door to the framed and panelled. The common ledged door merely consists of a number of upright planks held together by three transverse ones, called *ledges*. When these ledges are framed into perpendicular sides, but still having perpendicular planks nailed on their outside, they are called *framed and ledged doors*, and are the best kind of common doors for outside work. FRAMED AND PANELLED DOORS are made as follows (see *fig.* 27):—The workman first cuts out certain pieces of stuff of the thickness which the door is to be; three of these must be a little longer than the door is high, and if it is a six-panelled door, there must be four a little wider than the extreme width. The larger and vertical ones are called *styles*, while the shorter transverse ones are called *rails*. The styles are usually distinguished as *outside* and *middle styles;* but the rails are severally called the *top rail*, the *frieze rail*, the *lock rail*, and the *bottom rail*. In the edges of each of these, corresponding with every point of union, certain lines are marked or *set out* by means of a *scribe*, and the wood *within* these lines on the styles is cut away with a mortise chisel, leaving an oblong rectangular space through it, called a mortise. From the rail the wood is removed *external* to these lines, and the portion left is called the *tenon*, which exactly fits into the mortise, the rail coming closely up to the style with a fine joint, and the two forming a level and continuous surface. In this way the styles and rails together constitute a strong framework, with six rectangular openings left, or, in a four-panelled door, with four only. The edges bordering upon these openings are ploughed with a plane, for the purpose of holding the panels; and, finally, a panel of wood, considerably thinner than the styles and rails, is cut and inserted in these grooves, first detaching the outside styles, and then replacing them after the panel is introduced. In this state the door is said to be tried-up; that is to say, the joiner has put it together in such a way that it will present all its surfaces in the same plane, excepting the edges of the styles and rails. It is then left until it is to be finished off, which is not usually done until the door is required to be hung. For this purpose the door is again taken to pieces, and all the surfaces smoothed off with the smoothing-plane; it is then put together with glue or white-lead, and wedges are driven into each of the tenons from the outside, whilst the door is held in a cramp. It is now said to be finished off and glued up, and is left to dry; after which the mouldings are stuck in and bradded, and the ends of the tenons and styles smoothly *cleaned off*, whereupon the door is ready for hanging. When the

Fig. 19

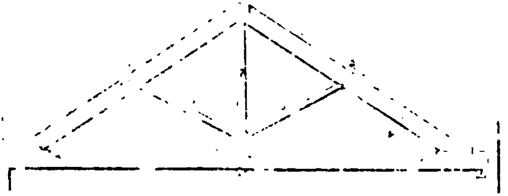


Fig. 20

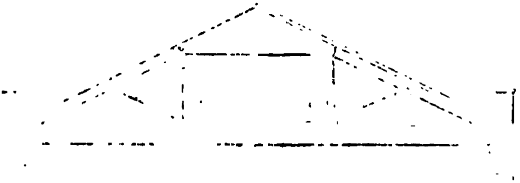


Fig. 21

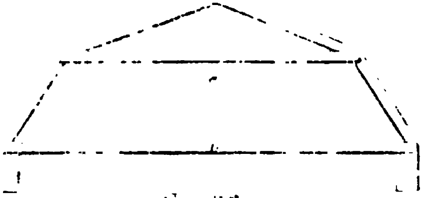


Fig. 22

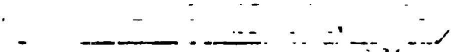


Fig. 24

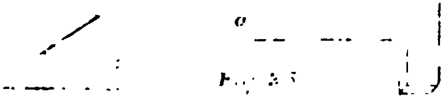
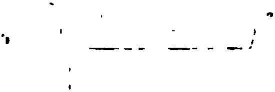


Fig. 23



but wherever this material has been used, its place is occupied by only a shred of worm-eaten wood, ready to rise into dust on the slightest agitation. Bond timber, when used at the angles of walls, should always be notched in such a way as to act as a tie both ways, when the weight comes on. This is effected by cutting the notch deeper at the shoulder than at the extremity in each piece. *Lentils* are pieces of timber which are laid over and across doors and other openings, and they have usually a rough arch turned over them. They should never extend into the outside face of brick or stone work, but should abut against an arch made of one or other of these materials.

102. FRAMED PARTITIONS, in house work, are almost always made of timber 4 inches by 3 inches, which is commonly called *quartering*. They are introduced where there is no wall under, and are generally lathed and plastered, and the intervals either filled up with sawdust, poured in from the top, or with bricks called *brick-nogging*. In either case, the weight is considerable; the timber alone of a square of quartering being several hundredweights, and when bricks are introduced it is of course greatly increased. To obviate the *sagging*, or bending, which would otherwise occur, these partitions are either trussed or, when they occur in the highest story, they are often suspended from a principal, which, being trussed, bears the weight with ease. The annexed forms of partitions are the most common, and provide for the introduction of a door, either in the middle or in the side. (See *figs*. 17 and 18, in which A A is the sill; B B, the head; *c c c*, the posts; *d d d d*, the braces; *e e e e*, the studs, which are generally fixed 18 inches from centre to centre, so as to take a three-feet lath).

103. ROOFS are the most complicated parts of carpentry, and often exercise all the ingenuity of even a skilful workman. They are made in a great variety of forms, to suit all the varying areas which are to be covered, and they are composed of the following pieces of timber, or several of them combined together:—

1st. WALL PLATES (1 1, *fig*. 19) are pieces of timber, generally four inches by three inches, laid on the wall to distribute the force of the roof, and to bind the walls together. They are sometimes called *raising plates*.

2ndly. THE TIE-BEAM (2 2), a horizontal piece of timber connecting two opposite *principal* rafters. Its object and use is twofold; viz., to prevent the walls being thrust out, and also to support the ceiling-joists. When placed some distance above the bottom of the rafters, it is called a *collar beam*.

3rdly. THE PRINCIPALS (3 3), or principal rafters, two strong pieces of timber in the sides of the truss, supporting, by means of the next following piece, the whole framework of common rafters upon which the covering rests. These principals are trussed in various ways.

4thly. THE PURLINES (4 4), longitudinal pieces lying upon the principals, and notched into them.

5thly. THE COMMON RAFTERS (5 5), ranged at equal distances from each other, and extending from the ridge of the roof to the pole-plates.

6thly. THE POLE-PLATES (6 6) rest on the ends of the tie-beams.

7thly. THE KING-POST (7 7), an upright piece of timber, framed into the principals at the upper end, and into the tie-beam below. The object of this piece is to support the tie-beam, which it does by means of the screw-bolt, which is indicated by dotted lines at 2.

8thly. A STRUT (8 8) is inserted on each side between the bottom of the king-post and the middle of the principal, just under the purline, whose weight they are intended to support. The whole piece of frame-work, consisting of the principals, tie-beam, key-post, and struts united together, is called a truss.

104. Besides those parts which are common to every roof, there are also others which are only occasionally introduced, and in roofs of large span more especially. Therefore, instead of the king-post, queen-posts are sometimes used (see *a a*, *fig*. 20), which are raised direct to the middle of the principals from the tie-beam, and their upper ends are connected together, and at the same time kept apart, by a *straining-beam*, while below they are furnished with a *straining-sill* for the same purpose.

105. The VARIOUS FORMS of ROOFS are:—1st, the *lean-to*, or *shed-roof*; 2nd, the *truncated roof*; 3rd, the *hipped-roof*; 4th, the M *roof*; 5th, the *dome*; and 6th, the *curb roof*. The lean-to is the most simple form, and merely requires a wall-plate; or, in addition, if the rafters are more than eight or nine feet long, a purline and a *ridge-board*; to these the rafters are nailed in the usual way. Truncated roofs are made with queen-posts, and must have a lead flat at the top. Hipped-roofs require a principal at each hip, which must be trussed if of more than 10 or 12 feet in length. The M roof consists of two separate roofs, each containing its proper trussed principals, and abutting upon a central gutter-board, which must be lined with lead, before the roofing is applied. Domes are

constructed from arched timbers all meeting in a common centre, and supporting one another. Curb roofs (see *fig.* 21) are employed chiefly in small town-houses where increased chamber accommodation is wanted without raising the wall higher than necessary. The tie is confined to a beam in the floor, and to a counter beam (c) introduced where the angle is made. Each of these may be trussed if the span requires it. For small roofs of less than 10 or 12 feet of span, where economy is an object, principals are dispensed with, and a purline is thrown in from wall to wall, upon which the rafters are placed, and a ceiling joist spiked against them. It is, however, only fit for rooms where the goodness of the ceiling is not an object.

106. THE PITCH OF ROOFS must be proportioned to the material which is to cover it, tiles requiring a higher pitch than slate, and this latter greater than copper or lead. The following table gives the pitches proper for each material:—

PROPER PITCH OF ROOFS.

Kind of Covering.	Inclination to the Horizon.		Height of Roof in parts of its Span.	Weight of a Square.
	deg.	m.		lbs.
Zinc	3	50	1-48	100
Copper ...				100
Lead				700
Slates, patent ...	22	0	1-5	1120
,, duchesses	26	33	1-4	900 to 500
Stone slate ...	29	41	2-7	2380
Plane tiles ...	29	41	2-7	1780
Pantiles	24	0	2-9	650
Thatch	45	0	1-3	...

107. THE TRUSS proper for the ordinary house roof is the king-post truss (*fig.* 19), which is adapted to any roofs of not more than 30 feet span. As the posts and principals are screwed into the tie-beams with great force, it is obvious that the screws should always be inserted in the direction of the strain upon them, because iron is capable of a much greater cohesive power in the direction of its length than in that of its breadth (see *fig.*).

108. THE SCANTLINGS proper for roofs of ordinary sizes are as follows:—

Span of 20 feet,

Tie-beam.	King-post.	Principal.	Struts.
in. in.	in. in.	in. in.	in. in.
9 by 4 ...	6 by 4 ...	8 by 4 ...	4 by 4
	Span of 25 feet,		
10 by 5 ...	7 by 4½ ...	8 by 4 ...	5 by 4
	Span of 30 feet,		
11 by 6 ...	8 by 6 ...	9 by 4 ...	5 by 4

Span of 30 to 45 feet,

Tie-beam.	2 Queen-posts.	Principals.	Straining-pin.
in. in.	in. in.	in. in.	in. in.
11 by 6 ...	6 by 4 ...	8 by 4 ...	7 by 4

PURLINES.	in. in.
6 feet long require a scantling of	6 by 4
8 ,, ,, ,,	7 by 5
10 ,, ,, ,,	8 by 6
12 ,, ,, ,,	9 by 7

COMMON RAFTERS.	in. in.
8 feet long require a scantling of	4 by 2½
10 ,, ,, ,,	5 by 2½
12 ,, ,, ,,	6 by 2½

109. These several roofs are put together by the carpenter, by the aid of his various tools, with which he cuts out the mortises necessary to receive the different parts; as, for instance, the ends of the king and queen-posts, which are tenoned into the tie-beam, and screwed there by means of iron bolts, on the principle of bed-screws, whose female nuts are dropped into sockets cut in the sides of the posts exactly to receive them. The roof should always be put together on the ground; and then all its several parts are marked and taken to pieces again, in order to be raised to their proper places on the walls. To an inexperienced builder this operation seems a very hazardous one, and so it really is, if incautiously attempted. In a tall house, when the walls have not long been built, the mortar is so yielding that they will sway considerably before they are braced together by the tie-beams, and till these are up they can scarcely be considered safe from all danger of falling in or out. The whole truss (including the tie-beam, king-post, struts, and principals) is usually lifted bodily up to its place, because the act of screwing up the bolts is not easily effected on the top of a newly-built wall. When these are safely fixed, the purlines, pole-plates, and ridge board are added, and then the common rafters may be spiked down at the carpenter's leisure, taking care to build the walls carefully up to the purlines so as to support them.

110. The stair-carriages, in the usual way, are fixed by the man who undertakes the staircase, or, at all events, under his superintendence, though they are measured and paid for on the same principles as ordinary carpenter's work, that is, unless they are included in the contract for the staircase as a whole, which is the best arrangement. They are framed and inserted in the wall, exactly in the same manner as the other joists; but, as they require to be fixed at particular distances, and often at varying angles, as in geometrical staircases, the

ordinary carpenter is not capable of effecting this.

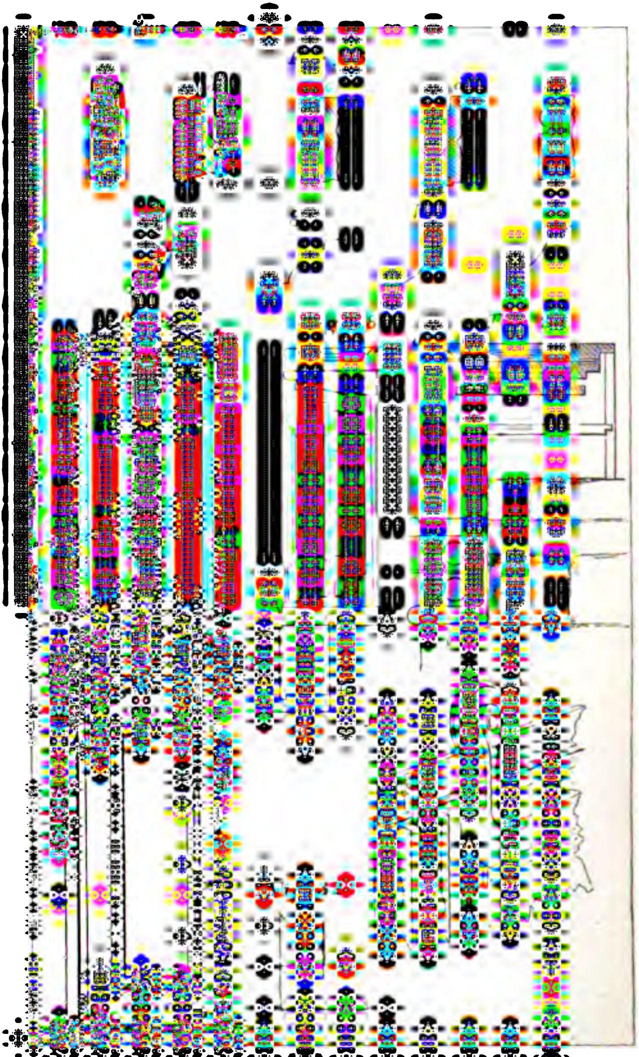
111. General Remarks on Framing.—Sometimes the timber to be used is not long enough for the purpose to which it is to be applied, and then two pieces must be *scarfed*, or united together so as to form one continuous plane. It is clear that it is impossible so to unite them as to make them as strong as if composed of a single piece, and, consequently, the art of the carpenter is exercised in avoiding more weakening of the whole than is inherent of necessity in the act itself. Every two pieces thus joined require some force to compress them equally, and for this purpose iron bolts are used, which act as a tie, and as the cohesive power of iron is great and the hole in the wood is small, the timber is not diminished in strength in that respect. If wooden pins are used, the bore being larger, the timber must be more or less weakened. *Fig.* 22 represents the ordinary mode of *scarfing*, which is sufficient for all common purposes. When it is found necessary to introduce *iron straps*, considerable attention must be paid that the strain upon them is in the right direction; and this is more especially necessary in the strap which connects the foot of the principal with the tie-beam. As often fixed, it binds down the rafter, but does not confine it from thrusting outwards; and to effect this latter purpose, it should be placed farther back on the beam, and have a bolt through it to allow it to turn round; it should grasp the rafter close to its foot, where it should be notched in. This is shown in *fig.* 23, in which also the proper form of the tenon is given. When pieces of timber merely abut on one another at their ends, and their tendency is to thrust towards each other, no joint is necessary. When bond timber or wall-plates meet at an angle, the best joint is that shown in *figs.* 24 and 25, in which *a* shows the two pieces united, and *b c* each of them cut ready for joining. When timber stands in a horizontal direction, it is liable to bend by its own weight, called *sagging*; and when this is increased by an extra load, it is still more liable to give way. No beam ought to be trusted for any length of time with more than one-third or one-quarter of the weight which it will break with.

Sub-sect. B.—Joinery.

112. Joinery comprises the art of employing wood in the external and internal finishing of houses; it demands the strictest attention both of the workman and of the superior, for on its proper execution depend in great measure the future comfort and health of those who inhabit them. Great care is required in the selection of the timber, which should be of good quality and well seasoned; and the skill and experience of the workman are equally taxed in putting the materials together, so as to avoid those twistings of surfaces and openings of joints which are so commonly seen. In large towns, timber is now desiccated in great quantities, by those who also reduce it into small scantlings for the joiner's use; and this is of great service when time is an object. Nevertheless it should be known, that however dry timber may be before it is planed, it will also shrink still more after that operation, and will also often cast or twist considerably in addition. In the country, where this process cannot be accomplished, the timber should be still more thoroughly seasoned, and should never be used without either having been submitted to the warm air near an oven for some time, or else to the whole of a summer's sun. After it is *tried-up*, as it is termed (that is, framed loosely together in-doors, &c.), it should remain for three months, if possible, before it is glued-up, during which time it will shrink to its full extent, if kept in a dry place, and will afterwards be sure to stand without the joints opening. With a knowledge of these facts, therefore, it behoves every person who intends to build, as soon as he knows what he will want, to take care and lay in a stock of proper timber suited to the joiner's work, cut into proper thicknesses, and ready for his use. These should again be framed and *tried-up* as soon as they are dry enough, and may then remain for the joiner to *glue-up* and finish off at his leisure. Flooring boards can scarcely be too soon planed and stacked in the dry, as they shrink very considerably after planing; and all the doors and windows should at once be cut out and framed. In outside work, white-lead is used in the joints instead of glue.

113. The Tools of the Joiner are so numerous, that it is out of the question to do more in this book than allude, in a cursory way, to those most common, and to their mode of employment. They may be enumerated as, 1st, machinery for holding parts together or in place—viz., the bench, the cramp, the mitre-box; 2ndly, tools for dividing, as saws, chisels, hatchets, adzes, and the like; 3rdly, smoothing tools, as planes, spoke-shaves, rasps, and straight-edges; 4thly, boring-tools, as centre-bits, gimlets, and awls; 5thly, measuring tools, as rules, squares, scribes, bevels; and 6thly, hammers and mallets.

114. The Bench is a long and strong wooden table, 10 or 12 feet long and 2 feet 6 inches wide. On one side there is a vice



[illegible]. 37—40.

118. The ordinary rule is usually a two-feet rule, with a brass rod concealed in one arm capable of extending the measure to three feet; besides which, rods are wanted for setting out the work in hand exactly, and the feet are marked upon strips of deal for the occasion. SQUARES are of all sizes, but usually with one arm of iron. SCRIBES are small wooden rods, in which a sharp pin is fixed, and having a moveable shoulder fixed by a wedge, so that a line may be easily marked exactly parallel with the edge to which the shoulder is applied, and at the distance at which the latter is fixed by the wedge. BEVELS are tools somewhat like the square, but hinged so that they retain the angle at which they are set. The joiner is thus enabled to carry off the measure of the angle which he has to fit, and by applying the bevel to his work he can readily avoid loss of time.

119. MALLETS AND HAMMERS are too well known to need description.

120. MOULDINGS (see *fig.* 26) have been already alluded to as the result of the use of a plane for the purpose. They are either worked upon strips of wood and then mitred and stuck by means of brads into the angles between the rails and panels, or else they are worked upon the rails themselves. The former plan is by far the least trouble, and is generally adopted in all work which is to be painted, while the latter plan is necessary for mahogany or oak doors, or window sashes, or for shutters or other similar work. The ordinary mouldings are as follows:—1st. the *bead*, a mere rounded edge; 2ndly, the *quirked bead* (*fig.* 26 *a*), which is a bead ending in a sharp groove; 3rdly, the *bead and double quirk* (*fig.* 26 *b*), in which there is this same sharp groove on each side the bead wrought on the angle of the stuff; 4thly, the *double bead and quirk* (*fig.* 26 *c*) consists of two beads, separated by a quirk or sharp-edged groove. Mouldings, in general, are separated from each other by narrow planes, at right angles to one another, and called *fillets* (*fig.* 26 *d*), the divisions being called *members*. A semi-cylindrical moulding rising from a plane parallel to the face, and terminated on the edge by a fillet, is called a *torus*, being distinguished from the *bead* by the fact that the outer edge terminates with a fillet (*fig.* 26 *e*). A series of semi-cylindrical mouldings constitute what is called *reeds*. Besides these, there are four mouldings very commonly used, and called respectively the *ogee* and *ogee reverse*, the *ovolo* and the *quarter-round* (*fig.* 26 *f g h i*).

121. DOORS are framed in various ways, from the common ledged door to the framed and panelled. The common ledged door merely consists of a number of upright planks held together by three transverse ones, called *ledges*. When these ledges are framed into perpendicular sides, but still having perpendicular planks nailed on their outside, they are called *framed and ledged doors*, and are the best kind of common doors for outside work. FRAMED AND PANELLED DOORS are made as follows (see *fig.* 27):—The workman first cuts out certain pieces of stuff of the thickness which the door is to be; three of these must be a little longer than the door is high, and if it is a six-panelled door, there must be four a little wider than the extreme width. The larger and vertical ones are called *styles*, while the shorter transverse ones are called *rails*. The styles are usually distinguished as *outside* and *middle styles;* but the rails are severally called the *top rail*, the *frieze rail*, the *lock rail*, and the *bottom rail*. In the edges of each of these, corresponding with every point of union, certain lines are marked or *set out* by means of a *scribe*, and the wood *within* these lines on the styles is cut away with a mortise chisel, leaving an oblong rectangular space through it, called a mortise. From the rail the wood is removed *external* to these lines, and the portion left is called the *tenon*, which exactly fits into the mortise, the rail coming closely up to the style with a fine joint, and the two forming a level and continuous surface. In this way the styles and rails together constitute a strong framework, with six rectangular openings left, or, in a four-panelled door, with four only. The edges bordering upon these openings are ploughed with a plane, for the purpose of holding the panels; and, finally, a panel of wood, considerably thinner than the styles and rails, is cut and inserted in these grooves, first detaching the outside styles, and then replacing them after the panel is introduced. In this state the door is said to be tried-up; that is to say, the joiner has put it together in such a way that it will present all its surfaces in the same plane, excepting the edges of the styles and rails. It is then left until it is to be finished off, which is not usually done until the door is required to be hung. For this purpose the door is again taken to pieces, and all the surfaces smoothed off with the smoothing-plane; it is then put together with glue or white-lead, and wedges are driven into each of the tenons from the outside, whilst the door is held in a cramp It is now said to be finished off and glued up, and is left to dry; after which the mouldings are stuck in and bradded, and the ends of the tenons and styles smoothly *cleaned off*, whereupon the door is ready for hanging. When the

moulding is worked in the solid, the joiner is obliged to run it on the inside edges of the styles and rails with a mitre at each angle, and to effect this he must sink the shoulder o each rail into the adjacent style, after doing which they are taken to pieces, and the moulding worked up to the mitre. It is a much more difficult piece of work than the common door with inserted mouldings. Like the rails, the panels have received the names of *frieze panels*, *middle panels*, and *bottom panels*. Sometimes the panels are left flush on one or both sides, and they are then called *flush panels*. In the best kind of these a bead is worked on the edge, and it is then called *bead and flush*; but often the top and bottom sides are left square, and then it is called *bead and but*. The different kinds of panelled doors are as follows:—

1st. *The door square, with flat panels on both sides*, in which there is no moulding whatever.

2nd. *The quirked ovolo, fillet and flat, with square back*, in which there are mouldings, as described in par. 120, on one side of the door without any on the other.

3rd. *The quirked ovolo, bead and flat panel*, with or without the flat back.

4th. *The quirked ovolo, bead, fillet, and flat panel.*

5th. *Quirked ogee, quirked bead, and flat panel.*

6th. *Quirked ogee, cocked bead, and flat panel.* In this the bead is raised above the lower part of the ogee.

7th. *The cove-cocked bead and flat panel.*

8th. *The quirked ovolo, bead, fillet, and raised panel*, much used in outer doors.

9th. *The quirked ovolo, bead, and raised panel, with ovolo on the raised panel and square back*, also used for outer doors.

These are the most common mouldings; but every year the fashion alters, and the plane-maker has to form fresh tools for the joiner on the whim of the architect.

122. THE HANGING OF DOORS AND FIXING OF THE LOCKS is an operation requiring some dexterity, and unless it is well performed the comfort of the inmates will be constantly endangered. Nothing is more likely to annoy the irritable man than the occurrence of dragging on the carpet, or the imperfect closing of the latch, or the occurrence of a gap all round, and yet these things are seldom sufficiently well attended to by the workman, unless he is well supervised. In all cases the margin of the door-case is beaded, and the hinge is supposed to be continuous in its proportions with the bead, though this is seldom strictly the case. There are various modes of hanging doors, but in all cases the hinge itself consists of two parts, one of which is screwed into the door-post or frame, and the other into the hanging style of the door. These two parts are connected, at the part called the knuckle, by a pin, which passes through a cylinder formed in each respectively. The axis of this pin is called the axis of the hinge, and when several hinges are used, the axes of all must be in the same straight line, which is called *the line of the hinges*. The placing of the hinges depends upon the form of the joint; and as the motion of the door is angular, and performed round a fixed line as an axis, the hinge must be so fixed that the motion be not interrupted; thus, if the joint contains the surface of two cylinders, the convex one in motion upon the edges of the closure, and sliding upon the concave one which is at rest on the fixed body, the motion of the closure must be performed in the axis of the cylinder, which axis must be that of the hinges. In this way, whether the joint is closed or not, the joint will be perfect; but if the joint is a plain surface, it is necessary to consider in what side of the aperture the motion is to be performed, as the hinge must be placed on the side of the closure where it revolves. In the hanging of doors, next to the close-joint, the most important object is to clear the carpet, which may be accomplished by observing the following rules:—1st. Raise the door by putting under the bottom-rail a piece of wood about the thickness of the carpet. 2nd. Let the knuckles of the top and bottom-hinges be so placed, that the top-hinge projects about one-eighth of an inch beyond the lower. 3rd. Let the jamb on which the door is hung, be fixed about one-eighth of an inch out of the perpendicular, the upper part inclining towards the opposite jamb. 4th. Let the inclination of the rebate be such that the door shall, when shut, project at the bottom towards the room about one-eighth of an inch. All these several points together cause the door to open in such a way, that it clears the floor at least half-an-inch when of the ordinary proportions. Several kinds of rising hinges have been introduced which answer this purpose still better; but they are not very sightly unless made of brass, besides which they occasion considerable soiling of the surface, from the oil which is necessary to enable them to work freely, oozing out. LOCKS are put on the door either by being screwed on the exterior of the lock-rail, in which case they are called *rim-locks*, or by being inserted into a mortise cut in it from the edge,—they are then called *mortise-locks*. The latter are those commonly used in all the doors of ordinary houses, except the outer and basement and, in some cases, the upper bedroom, doors. In forming the mortise for the lock, a *bit* is first used, to

sink two or three deep holes, which are afterwards connected together to form a deep mortise, in which the lock is fitted; and then lesser holes are bored from the outer and inner surface of the rail, to take the key, spindle, &c.; after which the *striking-plate* is fixed in the jamb, and the whole is completed by adjusting the various parts so as to work correctly together. Such is the ordinary mode of hanging doors, whether folding or not; but, in some cases, as in large folding-doors, or in coach-house doors, it is desirable to hang them so that they will never be disturbed or "banged" (as the action is commonly called) by the wind from without. To effect this, they are made to slide into cases fitted for them in the framed partition; or, in the instance of coach-house doors, one behind the other. A reference to *figs.* 30 and 31 will show the machinery by which this is best effected; it consists of a bar of brass or iron, fixed on the top of the door-case head, on which run two wheels, from the axles of which bars depend, to take the weight of the doors. A somewhat similar plan is often adopted in outer doors, in which the wheels are placed on a rail fixed in the sill instead of the door-head, and then the weight is carried directly, instead of being suspended, as shown in the *figs.* above alluded to. The suspension is, however, the smoothest and best plan; and if the door is so fixed that it cannot *quite* come out of its case, it requires no traveller in the floor below, but only a guide within the case. *Fig.* 31 shows a single wheel, and the mode of attachment of the traveller to the door, as well as that of the guide to the door-post.

123. The Frames in which doors are hung are door-cases, in which two sides and a top of quartering are rebated, to receive the thickness of the door; the sides are then tenoned above into the top and below into a sill, which is let in flush with the floor: these are used for ledged-doors. For internal work, *jambs* are used, which are composed of inch-and-a-half or two-inch stuff, rebated for the thickness of the door, and united at the top angles, according to the plan shown in *fig.* 32; after which they are fixed to the door-openings, by nailing them to plugs or wooden bricks, and their bottom-ends merely abut upon the floor, without being fixed in any way to it. After the jambs are thus fixed, an architrave, composed of a plane surface, with various mouldings worked upon it, and mitred at the angle, is fixed upon them. The inner margin of this architrave is always finished with a bead, and this serves to conceal the hinge, as already remarked in paragraph 122.

124. The Varieties of Doors are: 1st, the common ledged-door; 2nd, the framed and ledged-door; 3rd, the framed and panelled-door; 4th, the framed and flush panelled-door; 5th, either of the two last with mouldings run in the solid; 6th, either of the two last with mouldings stuck in; 7th, the jib or concealed-door; and 8th, folding-doors.

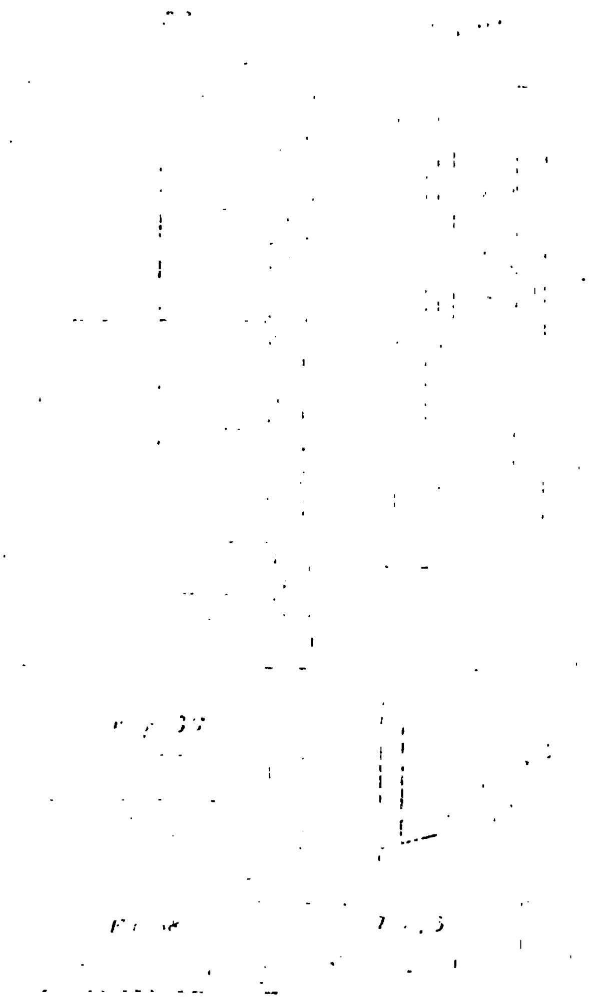
125. Shutters may also be considered under the head of doors, being constructed and hinged on the same principles, and used for the same purposes. They are generally employed only at night, for the purpose of closing openings, which are in the day-time sufficiently protected by the glazed window-sash. The chief difference in shutters consists in the method of housing them when not in use, some being folded into receptacles made to receive them, and called *boxes;* others being merely folded back flat against the wall, either plainly, as in outside shutters, or when inside in the form of pilasters; whilst others again are either hung like sashes and slide into cases below, or else they are suspended by rollers upon rods, and slide into cases at the sides, on the principles described in par. 123, and illustrated by *figs.* 30 and 31; lastly, some shutters are taken down entirely when not in use, and are carried off to a convenient place, as is generally done with shop-shutters; but in many cases, now, their place is supplied by revolving iron shutters, which are formed of upright or horizontal iron laths, and which, when not wanted, are wound round a central spindle at the sides or top of the window, and behind the frames. Boxed shutters (see *fig.* 28) are framed like panelled-doors, except that the styles and rails are made of thinner stuff, and they are divided into two portions for each window, each of which is composed of the front shutter, which is visible by day, and of the shutter-flap or flaps, which are concealed behind it, in the box, and generally made without mouldings. By a reference to the figure, which is a horizontal section, it will appear that the shutter is hinged to the inside of the sash-frame, and that it drops into a rebate in the box, which is made to receive it exactly. To the inner edge of this shutter the first flap is then hinged, so as to lie flat against its back when in the box; and this flap, again, has another hinged the reverse way, which, by this method, also lies parallel to the other two. This box for the reception of the shutters either stands into the room at a right angle with the wall and sash, as in *fig* 28, or else forms a more or less obtuse angle with the latter, and is then said to be *splayed* (see *fig.* 36). Each box is composed of three sides—namely, first, the inside lining of the sash-frames, to

which the shutter is hinged; secondly, of *the grounds* opposite to this, to which the architrave is attached; and, thirdly, of the *box-lining* connecting the two. When the shutters are made of the pilaster pattern (*fig.* 29), they are hinged in a peculiar way, so as to show a rule-joint (*fig.* 29 *a*), and the grounds and lining are fixed in a different manner, for which see *fig.* 29. When the shutters are made to retire into side cases, they should be suspended by rollers upon bars, as shown in *figs.* 30 and 31. The cases are prepared by leaving space for them in the walls, which receives a box, and the surface of this is lathed and plastered with the wall; or it is better, if the wall is of sufficient thickness, to introduce a frame of quartering, and then after the plastering is done, to slip in the box, with the rollers complete. When the shutter is made to descend into a case below the sash-frame, it is suspended in the same way as an ordinary sash, and becomes, in fact, a third and fourth sash, it being almost always composed of two portions. In this mode the sash-frame is made at first of nearly double the ordinary depth, so as to be divided into four separate faces, two for the sashes and two for the shutters, each having its separate cord, pulley, and weight. This, however, has a very unsightly appearance inside, as in the day-time the cords are apparent, although the shutters are entirely hidden by a lid, which folds down and encloses them.

126. Grounds have been alluded to, in speaking of the boxings for shutters; and they may now be more clearly described as being pieces of wood, framed or plain, plugged to the wall round windows, doors, or other openings, for the purpose of fixing architraves or other mouldings to, and for the plasterer to finish his plaster against; they are also fixed all round the bottom of the walls of well-finished rooms, for the plasterer as well as the joiner, but in commoner work they are omitted, and the plaster is finished off with a ragged edge, which is afterwards hidden by the skirting-board. In fixing grounds, the joiner must always be very careful that they are quite upright, inasmuch as if they require rectification the plaster must be seriously broken and disturbed. About three-quarters of an inch on the surface of the brickwork must always be allowed for the thickness of the plaster.

127. Almost all ordinary Framing at a right angle, as in fixing linings, jambs, &c., is effected by a deep rebate on the ends of one piece of the two, and a corresponding groove is ploughed in the face of the other (see *fig.* 32). A bead is sometimes worked on the outer angle, but the above is the usual method of making the joint.

128. Sash-Frames and Sashes (see *figs.* 33, 34, 35, and 36), are composed of a light framework of wood sliding in an outer hollow case, in which the weights balancing the sashes are suspended, and by which the sashes themselves are held in their places, and are yet allowed to slide freely up and down. The sash-frame is formed of four sides, of which the top is merely a plain piece of wood, having a bead on the inside. The sides are more complex, the section of each consisting of an oblong square cavity, divided into two perfect squares, one for each pulley-weight (see *fig.* 28 *b*). This whole side of the sash-frame is for the purpose of holding the weights in its inside, of guiding and confining the sashes, and for hanging the shutters to. That part in contact with the sashes is called the *pulley-piece* (*c*), which is bounded on the outside by the *outside lining* (*a*), on the inside by the *inside lining and bead* (*d*), and divided into two equal smooth surfaces by the *parting bead*. The bottom of the sash-frame is formed by the *sill*, which is weathered in the manner shown in *fig.* 34, and overlaps the stone sill about three-quarters of an inch, where it should be bedded in white lead. The frames of French and Gothic casements are made on the same principle as ledged doors, the only difference being that beside the rebate which receives the casement a groove is often ploughed, in which a tongue fixed on the edge of the casemate is received, or *vice versa*; and also a water-bar of iron or brass is screwed into the upright surface of the rebate on the sill, to prevent the water beating in. Sashes, whether French or English, are of very simple construction, being merely open frameworks of wood, with bars of a peculiar form let in, in order to receive the glass when this is of a less size than the frame. They should be made of very well-seasoned and sound wood, and if intended to be glazed with large plates of glass, they should be of oak, thoroughly dry. A section of the most ordinary sash-bar is given in *fig.* 37. English sashes, as before remarked, are suspended by cords upon pullies, and balanced by weights; but French and Gothic casements are hinged, as in the case of doors, brass hinges being generally employed. The fastenings of the former are very simple, but those for casements are much more complicated, it being very difficult to keep them closely shut. Sometimes strong bolts at top and bottom are used, but they are very inefficient; and the only perfect fastening is the *Espagnolette*, which lays hold of the sill and head at the same moment, and draws the sash into its place. It is now manufactured in a very neat form in England, chiefly at Wolverhampton, and is sold at a price varying



from £1 5s. to £1 10s., in brass. The French pattern may be had in iron for a few francs, but it is very unsightly, and not nearly so effective as the English.

129. **The Laying of Floors** is one of the simplest operations of the joiner, though it is often very badly performed. The chief variations in the floors depend upon the joints, which may either be *folded* or *straight-jointed.* In the former mode, the boards are laid in divisions, whose side-vertical joints are not continuous, but in bays of from three to six boards in each. In the latter, on the other hand, the side joints are continuous throughout their direction. In laying floors, it is better to prick up the ceiling of the highest story, and plaster the walls after fixing the sash-frames and the grounds. When this is done, the sound-boards may be laid and pugged, and then the floor may be laid, after which the ceiling of the room below may be proceeded with, and so on, downwards, throughout the house. By this method the keys of the ceiling-plaster are not broken by the driving of the nails above, which is a very important point towards the getting perfect ceilings. The boards, as prepared, have usually the face planed and the edges shot and squared. It is next necessary to gauge them, in order to have them of an uniform thickness; and to do this all that is necessary is, with a gauge to mark a line on the back part of the edge parallel with the planed face. When this is done the adze reduces the substance on the rough face at the points where the board lies on the joists; the intermediate part is left of the full thickness, in order that the strength shall be as great as possible; and as there is nothing here to support the board, it requires it all, and is not raised out of the level by it. Sometimes the board is not thick enough, and then pieces of chips, &c., are put in on the top of the joist, which is called *furring up.* The best floors are laid with battens, the quality depending upon the kind used, and upon the freedom from knots or shakes. When wider deals are used, they ought to be divided down the middle. The **Joints** are either *square, ploughed and tongued, rebated* or *dowelled.* The mode of laying the three first may easily be understood; and the last consists in introducing iron or wooden pins into the two edges, so that they are kept in apposition, as in the leaves of a dining-table. When dowels are used, the brads are driven in obliquely through the edge, so that the head of the brad is not seen on the surface. This keeps down the board at that edge, when the dowels secure the adjoining one, so that the whole face of the work is free from nail-holes. In our English rooms, however, carpets are so universally laid down, that these highly-finished floors are not much cared for; and it is only in dining-rooms and halls, where the oak-floor is to be polished and left visible, that a dowelled joint is ever required. The dowel should always be inserted in the space *between* the joists, and when the work is very particular, over the joists also. Wherever the board is too short to reach the full length of the room, it must be united to another board, either by being simply nailed against it with a square or spliced joint, which must always come over a joist, or by being ploughed and tongued with hoop-iron. In order to guard against the shrinking of boards which are not thoroughly seasoned, various plans are adopted, by which they are compressed in breadth. The most common of these is practised when they are folded, as already described in the beginning of this paragraph. In this mode, one is first laid, then the last of the fold, leaving an interval somewhat less than sufficient to take the boards without pressure. The intervening boards are then inserted with their outer edges in close contact with those first laid, and their inner ones raised from the joist into a ridge. The workmen next jump upon this ridge, and by main force press the boards into their places, where they are retained by brads in the usual way. When the boards are dowelled, this plan cannot so easily be practised, that is if the brads are to be concealed, and in that case a cramp is used, which screws the boards up to their places, by fixing it to the joists, which are not yet covered with boards. For this purpose holes are sometimes bored in them, and at other times the cramp itself is secured or clipped on to the joist.

Sub-sect. C.—Staircases.

130. The construction of staircases properly falls under the head of joinery; but as they are generally made by a workman who devotes himself to that particular department, it is better to comprise them under a distinct division. There are various methods of making and fixing wooden staircases, one of which is precisely similar to that adopted in those made of stone, in which each step is worked in the solid, and is wedged into the wall, which thus supports it, aided by the edge of the step below, the ground giving a final support to the bottom step, and this again transmitting a certain portion to the next, and so on. In all other modes of fixing them carriages of rough timber are worked into the wall, and upon them the steps are fixed.

131. **Staircase Carriages** have already been partially described, under carpentry; but, though they are measured on the

principles which regulate that mode of work, yet as they must be exactly adapted to the views of the *staircase-hand*, as the workman is called, who sets out the work, it is better to describe the manner of fixing under this head. These carriages consist, in the first place, of short horizontal joists, fixed in the walls by wedging, and intended to form landings, which are variously shaped, according to the form of the stairs and of the hall in which they are fixed; and, in the second place, of bearers, which are fixed in a slanting direction, exactly parallel with the stairs, and assuming such an angle as will correspond with them. These bearers are either two or three in number, according to the width of the stairs. In order, therefore, to fix these carriages, the first thing necessary is to *set out* the stairs, for which purpose a *story rod* is necessary, of a length sufficient to reach from one floor to that next above it, and upon this each stair and landing is marked with a pencil, by which all chance of error is avoided.

132. ALL STAIRS ARE SET OUT upon the same principle, and it is in the details only that any difference occurs. That principle is as follows; but in order to understand the description, it should be explained that every step is composed of a horizontal portion called the *tread*, and of a perpendicular one called the *riser*; the whole width of the stairs being called the *going*. It must be apparent that, in order to reach the level of the floor above, there must be formed a certain number of steps proportionate to the level to be reached, and it is also manifest that there is a limit beyond which it is not desirable to increase the height and width of each step. It is found by experience that a broad step should be of less height than a narrow one, the reason being that a man cannot well raise himself and throw himself forward at the same moment. By common consent, it is assumed that the two together should be about 17 or 18 inches, or half the ordinary stride of a man: thus, a 12-inch tread should have a rise of 5½ inches, and one of 10 inches should have a rise measuring 6¾ inches, or at the most 7 inches. This last proportion is the most common, and is that which should be followed in all ordinary houses, where it is practicable—the extra inch for the nosing making it appear 11 inches wide. In large, full-sized stairs, 12 inches may be adopted, but in no case should the height and width be more than 18 inches. As soon as the tread and riser are settled, the next thing is to calculate the number of risers which will be required to reach the floor above, which is effected by dividing the number of inches between the floors by the height of the riser. Thus, supposing the story to be 12 feet high, or 144 inches, this divided by 6 (the height of the risers) will give 24 as the number required. If the riser is to measure 6¾ inches, each must be reduced to quarters,—thus, 144 multiplied by 4 is equal to 576; this divided by 27 (the height of the riser in quarter inches), gives 21 and a fraction as the number of risers. The simple plan in such a case is to divide the story-rod into 21 equal parts, which will be found to be the height given above, the extra three-sevenths of an inch being practically lost when divided among 21 risers. After the number of risers is settled, the next thing is to fix upon the landings, if any, and to arrange the number of treads in each *flight*, which is the series of steps reaching from landing to landing. It must be borne in mind that each landing has a riser, and it must therefore be counted as one of them. The plan of the staircase-hall is then taken, and the number of treads is measured off by scale upon it. The treads, together with the landings, should correspond in number with the risers, and there must always be space found for them, as in the ground-plan marked *a*, *fig.* 39, in which the treads are all set off according to scale, and also the landings. The parallelogram *b* shows the right side of the staircase-hall, with the risers and landings set out upon it; and those marked *c* and *d* also show the two next sides in succession. The fourth side being occupied entirely by a landing, there is no occasion to set it out, though in a full plan it is better to do so. These parallelograms should also show the continuation of the staircase on the floors above, and on them the carriages may be indicated, as well as the lines of the hand-rail. In this way there is always a certainty of getting a proper headway, which, in hasty and ill-formed plans, is sometimes not fully allowed for. It should be calculated that a man *with his hat on* will at least require seven feet, and that for appearance's sake this is not sufficient, for less than a foot or two clear of the hat always gives a cramped look. Sometimes, however, at certain parts, it will be an object to save room for particular purposes, and then it may be allowed to depart from the rule, and to allow little more than the actual height demanded—namely, seven feet. Such are the general principles upon which every staircase is set out; the details depend upon the particular kind which is selected, and we shall now proceed to examine those from which the choice must be made, reminding the person who

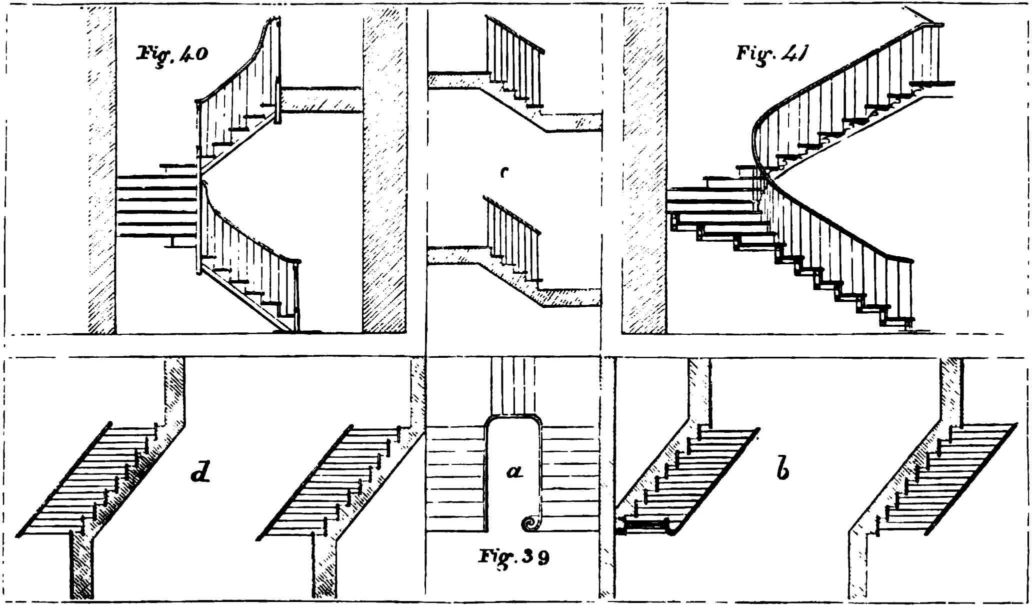


Fig. 39, *a*, *b*, *c*, *d*—PLAN OF BRACKETTED STAIRCASE. *Fig.* 40—DOG-LEGGED STAIRCASE. *Fig.* 41—GEOMETRICAL STAIRCASE.

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is making it that he will find them very much in cost, and in the room which they occupy. With regard to the first item, supposing the materials the same, the difference between a common dog-legged staircase and a geometrical one, with continuous hand-rail, will be as one to six, or thereabouts. The steps of staircases of which the surfaces are parallelograms are called *flyers*, while those which are more or less triangular are denominated *winders*. The three varieties are the *dog-legged*, the *bracketed*, and the *geometrical* stairs.

133. **Dog-legged Stairs** are chiefly used for the back-stairs of well-built houses, and for the only stairs of small ones, where economy of money and space requires their selection. They have no opening in the middle, or well-hole, such as is shown in the ground-plan (*a*, *fig.* 39), and the balusters and hand-rail of both the flights fall in the same vertical plane. In this kind carriages are fixed, as already described, and to these an upright post is attached, called *a newel* (see *fig.* 40 *a*). Upon the inner edge of the carriage a board, called the string, is fixed, and upon the newel, string, and carriage the stairs are supported, the whole flight being put together before they are placed in their seat, differing in this respect from the better classes, yet to be described. In some kinds of these stairs the nosings are returned at the ends of the steps, which is not the general practice. In others the risers are united to the brackets; and again, in some cases the string is framed into the newel, and notched to receive the ends of the steps, the other end having a corresponding notched board, and the whole flight being put up like a step-ladder.

134. **Bracket Stairs** are those which have an opening or well, with strings and newels, and are supported by landings and carriages; the brackets are united to the end of each riser, and are fixed to the string-board, which is moulded below like an architrave. As the internal angle of the steps is open to the end, and not closed by the string, as in common dog-legged stairs, and the neatness of the workmanship is as much regarded as in geometrical stairs, the balusters must be neatly dovetailed into the ends of the steps, two to each stair. The face of each front baluster must be flush with the face of the riser, and, as all the balusters must be at equal distances from one another, the face of the middle baluster must stand midway between the face of the riser of the preceding step and the succeeding one. The risers and treads are all previously blocked and glued together, and, when put up, the under side of the step nailed or screwed into the under edge of the riser, and then rough-bracketed to the strings, as in the dog-legged stairs, the pitching-pieces and rough strings being similar. In gluing up the steps, the best method is to make a templet, so as to fit the external angle of the steps with the nosing. Sometimes, and indeed very often at present, bracket stairs are constructed without newels, the hand-rail being continuous from the curtail to the top landing. To effect this, iron balusters are occasionally introduced at every angle, or more generally just above and below it. These are firmly fixed, and upon them the hand-rail entirely depends for its support, the remaining balusters of wood being merely for show. When, however, all are of iron, the work is proportionally stronger, and such ought generally to be the mode adopted. These bracket staircases, with square landings and continuous hand-rails, when the hall is of sufficient size, are even more handsome in appearance than the geometrical staircase, and as they have no winders they are much more convenient.

135. **Geometrical Staircases** are those which have an opening down the centre, called an open newel, but they differ from those previously described in each step being almost entirely supported by the wall, as is the case also with stone staircases. The risers and treads require to be very strong, and for stairs of four feet in width, should not be less than 1½ inch in thickness, increasing one-eighth of an inch for every 6 inches in length. The risers ought to be dovetailed into the cover, and when the steps are put up they are screwed up from below into the under edge of the risers. The holes for sinking the heads of the screws ought to be bored with a centre-bit, then fitted closely in with wood well-matched, so as entirely to conceal the screws and appear as one uniform surface. Brackets are mitred to the riser, and the nosings are continued round. *Fig.* 41 gives a good view of such a staircase; but there is a defect in this mode, which consists in the deceptive appearance of the brackets, which, instead of supporting the treads and risers, are really suspended to them. The internal angles also being hollow, or a re-entrant angle, except at the ends, which are terminated by the wall at one extremity and by the brackets at the other, there is a want of regular finish. The hollow is carried round the front of the riser and returned at the end, and mitred round the bracket. If the under side of the stairs is open to view, the hollow is continued along the angle of the step and riser; but in this country the under side is almost always lathed and plastered. In constructing this last kind,

the bearers should all be framed together, so that when put up they will form a perfect staircase. Each piece of framework which forms a riser should in the partition be well-wedged at the ends. This plan is always to be recommended when strength and firmness are of importance, as the steps and risers are entirely dependent on the framed carriages, which, if carefully put together, will never yield to any reasonable weight. In preparing the string for the wreath part, a cylinder should be made of the size of the well-hole of the staircase, which can be done at a trifling expense; then set the last tread and riser of the flyers on one side, and the first tread and riser of the returning flight on the opposite side, at their respective heights; then on the centre of the curved surface of this cylinder mark the middle between the two, and with a thin slip of wood, bent round with the ruling-edge, cutting the two nosings of these flyers, and passing through the intermediate height marked on the cylinder, draw a line, which will give the wreath line formed by the nosing of the winders; then draw the whole of the winders on this line, by dividing it into as many parts as you want risers, and each point of division is the nosing of each winder. Having thus far proceeded, and carefully examined your heights and widths, so that no error may have occurred, prepare a veneer of the width intended for your string, and the length given by the cylinder, and, after laying it in its place on the cylinder, proceed to glue a number of blocks about an inch wide on the back of the veneer, with their fibres parallel to the axis of the cylinder. When dry, this will form the string for the wreath part of the staircase to be framed into the straight strings. It is here necessary to observe, that about four or six inches of the straight string should be in the same piece as the circular, so that the joints fall about the middle of the first and last flyers. This precaution always avoids a cripple, to which the work would otherwise be subject. Where the going of the stairs is confined in width, the French are in the habit of carrying out the balusters several inches from the face of the string-board, but the weakness of the support has prevented its adoption in this country, and it is only suited to balusters of iron.

186. The Curtail Step is the lowest one of all, and it has a rounded internal extremity, with a curve, which has been compared to that of a cur's tail. It is made by first cutting out the curved part from a solid piece of deal, a riser is then selected about eighteen inches longer than the others, and of this a portion twenty inches in length is reduced to the thickness of a veneer; the thick part is then firmly mitred into the solid curved portion, round which the veneer is curled and glued, and the step has the smooth appearance which it presents in all well-made staircases. The tread is afterwards cut round to the same sweep, and when the moulding is added beneath the nosing it has a very finished appearance.

187. The Construction of the Hand-rail forms the last part of the joiner's art which will come under our consideration; and it is by far the most difficult, requiring a large amount of geometrical calculation as well as practical skill. It depends upon the principles, that if a cylinder be cut in any direction, except parallel to the axis, or base, the section will be an ellipsis; if cut parallel to the axis, a rectangle; if parallel to the base, a circle. Supposing, then, a hollow cylinder to be made of the size of the well-hole, and that it is cut by any inclined or oblique plane, the section formed will be bounded by two concentric similar ellipses; consequently, the section will be at its greatest breadth at each extremity of the larger axis, and its least breadth at each extremity of the lesser axis. Therefore, in any quarter of the ellipsis there will be a continued increase of breadth from the extremity of the lesser axis to that of the greater. Now, it is evident, that a cylinder can be cut by a plane through any three points; therefore, supposing we have the height of the rail at any three points in the cylinder, and that we cut the cylinder through these points, the section will be a figure equal and similar to the face-mould of the rail; and if the cylinder be cut by another plane parallel to the section, at such a distance from it as to contain the thickness of the rail, this portion of the cylinder will represent a part of the rail with its vertical surfaces already worked; and, again, if the back and lower surface of this cylindrical portion be squared to vertical lines, either on the convex or concave side, through two certain parallel lines drawn by a thin piece of wood which is bent on that side, the portion of the cylinder thus formed will represent the part of the rail intended to be made. The foregoing remarks apply to cylindrical well-holes; but they may be extended to those made on other seats. The various rules for the formation of hand-rails are too complicated for insertion here, and it will be sufficient to observe that the principle aimed at is to cut out the rails from a mahogany plank with as little waste as possible. For this purpose various *moulds* are used, which are applied to the surfaces of the plank, and by them the part intended

to be cut is marked. *The face-mould* or *raking-mould*, is applied to the two faces of the plank, and is regulated by a line drawn on its edge, which line is vertical when the plank is elevated to its intended position. The *falling-mould* is a piece of thin wood, applied and bent to the side of the rail-piece, for the purpose of drawing the back and lower surfaces, which should be so formed, that every level straight line, directed to the axis of the well-hole, from every point of the side of the rail formed by the edge of the falling-mould shall coincide with the surface. In order to cut the portion of rail required out of the least possible thickness of stuff, the plank is so turned up on one of its angles, that the upper surface is nowhere at right angles to a vertical plane passing through the chord of the plane. In this position the plank is said to be *sprung*. The *pitch-board* is a right-angled triangular board made to the size and tread of the step, one side being of the width of the tread, and the other of the height of the riser. When stairs are composed of both winders and flyers, two pitch-boards must be made to the respective treads, but of course of the same height, as the risers ought always to be. The bevel by which the edge of the plank is reduced from the right angle when the plank is sprung, is termed the *springing of the plank*, and the edge thus bevelled is called the *sprung edge*. The bevel by which the face-mould is regulated to each side of the plank is called the *pitch*; the formation of the upper and lower surfaces of a rail is called the *falling of the rail*; the upper surface of the rail is termed the *back*. In the construction of hand-rails, it is necessary to spring the plank and then to cut away the superfluous wood, as directed by the draughts formed by the face-mould, which may be done, by an experienced workman, so exactly with a saw as to require no further reduction; and when set in its place, the surface of both sides will be vertical in all parts and perpendicular to the plane. In order to form the back and lower surfaces, the falling mould is applied to one side, generally the convex, in such a manner that the upper edge of the falling-mould, at one end, coincides with the face of the plank; and the same in the middle; and leaves so much wood to be taken away at the other end as will not reduce the plank on the concave side; the piece of wood to be thus formed into the wreath or twist being equal to their given heights. Such is the description given of the mode of forming hand-rails in the ordinary books on joinery; but I do not believe that any man would ever be able to teach himself from them how to cut the rail in this economical mode. It is, however, always the province of the workman, and by no means essential to the setting out of the plan, which is all that the designer has to do. Most staircase-hands take many years to acquire their trade, independently of the time consumed in learning the art of joinery in general; and there are very few journeymen whose heads and hands are both sufficiently cultivated to practise this branch with success.

SUB-SECTION D.—THE PRESERVATION AND MEASUREMENT OF TIMBER, AND THE WAGES OF THE MEN.

138. THE PRESERVATION OF TIMBER, after it is inserted in a building, is quite as important as the considerations with regard to its mode of union and support. In the middle parts of houses almost any timber will remain sound, but in the roof and in the basement it is submitted to constant alternations of temperature, and often of moisture, since most roofs are at times liable to slight overflow from snow or storms. The most effectual remedy is effectual ventilation, both in the roof and under all the floors; and if this is thoroughly carried out there is no necessity for any further precaution. Corrosive sublimate is well known to have the power of destroying all vegetable as well as animal growth, and if dry-rot is feared, or has already shown itself, a solution of that substance is the best remedy. It forms the chief ingredient in the process called *kyanising*, which is a very effectual preservation against decay; and when united with pyroligneous acid, is perhaps as perfect an antidote as can be imagined. They are easily employed to all timber *in situ*; but the process, to be thoroughly effectual, requires to be done *in vacuo*, as carried on in the works of the patentee.

139. THE MEASUREMENT OF CARPENTER'S WORK is conducted as follows:—All large and plain articles, in which an uniform quantity of materials and workmanship is appended, are generally measured by the square of 100 superficial feet, such as single naked floors, roofs, &c. In the latter, however, wherever trusses are introduced, the roof is either measured by the cubic foot, or else the trusses are charged extra, at per foot running, or per cubic foot. All this should be specified in the contract. Plain centring is measured by the square; but as the ribs and boarding are quite different in value, they are measured and valued separately. Centring for groins is measured as for common work, but, in addition, the angles should be paid for by the foot running, that is, the ribs and boarding ought to be measured and valued separately, according to the superficial

contents of each, and then the angles should be measured lineally, which will pay for the extra workmanship and loss of timber. Wall-plates, lintels, and bond timber are measured by the cubic foot. Naked flooring is either measured by the square or the cubic foot; in all framed floors, however, it is usual to measure by the cubic foot, or else to allow extra for the large timbers which are not easily handled. Partitions are measured by the square or the cube, according to the locality; whenever they are trussed an extra price must be paid for workmanship. Battening to walls is measured by the square. All these measurements should be taken as soon as the roof is covered in, and before the ceilings are pricked up and the walls plastered, after which it is difficult to get at many of the dimensions. In all cases of carpenter's measurements, the pieces which have tenons are measured to the extremity of them. As, in this kind of work, the workmanship seldom bears any exact relative proportion to the amount of timber employed, it is always more satisfactory to value them separately, and to charge the timber throughout at per foot cube, and the workmanship at certain rates varying with the nature of the work. This, however, should be settled beforehand; and when the plan is known, the carpenter can have no difficulty in engaging to do it at a fixed price, unless it is of a very novel or complicated nature. The value of the timber, when the price per foot is known, is very easily arrived at *after* the work is done, the reduction of scantlings into cubic feet being so very easy an operation. For the benefit, however, of those who require such instruction, the following rule is given:—Multiply the width by the breadth in inches of each scantling, then multiply the product by the length in inches, which will give the number of cubical inches in the piece. Divide this by 1728, and the result will be the number of cubical feet in the piece.

140. JOINER'S WORK is measured by the foot superficial or by the foot running. Prepared boarding is charged and measured by the square, containing 100 feet. The labour of this is priced variously, according to the following kinds of work:—

1st. Edges shot.

2nd. Edges shot, ploughed, and tongued.

3rd. Wrought on one side, edges shot.

4th. Wrought on both sides, edges shot.

5th. Wrought on both sides, ploughed and tongued.

6th. Wrought on both sides, keyed and clamped.

Some of the foregoing are used only in flooring, while the others apply to wooden partitions. The price of labour and stuff together will vary with the thickness of the boards, and gluing will also be an additional charge, as will the tongue if of metal or oak. In measuring boarded flooring, the full dimensions are taken, from which the number of squares is to be computed. Deductions are then made for chimneys, staircases, &c. The price will depend upon the surface, whether wrought or plain, the kind of joints, the thickness and quality of the stuff, and whether the boards are folded or not; also, whether composed of boards, battens, or wainscot.

SKIRTING, when deep, is also measured by the foot superficial: the price depends upon the position, whether level, raking, or ramping, or upon the manner of finishing, whether plain torus, or rebated, or heavily moulded, or scribed to the floor or to the steps, or whether the plan of the room is square or circular.

WEATHER-BOARDING is measured by the square, as also are boarded partitions, deducting the doors and windows.

FRAMING is measured and priced at per foot superficial, the price being ruled by the nature of the work and the substance and quality of the wood.

An attempt has been made by Mr. Nicholson and others to apportion a price to each kind of work, calculated in decimal parts of a day's work, so that the value of a day's work being known, the price per foot or per hundred feet is calculated in decimal parts of that sum. For instance, suppose a carpenter gets in any given locality 5s. per day, then, as Mr. Nicholson considers that a square of common inch-partition occupies in fixing 1.307 days, the price to be paid for the labour employed is 6s. 6½d., as near as may be, in English coin, that sum bearing the same proportion to 5s. which the time occupied does to one day. Supposing it possible in practice to do this, as he professes to do, it would simplify materially the estimating of labour; but in fact I believe it to be only an approximation to the real value, because it is almost impossible exactly to arrive at the time which any piece of work ought to take, and, therefore, though it may serve as a guide, yet it is not entirely to be depended upon.

The following table is more easily understood, being, in fact, the ordinary London labour prices; but it must be considered that, though these prices are from 30 to 50 per cent. above those of the country, yet that a corresponding amount of work is always expected to be done there. The London journeymen are the pick of England, and they cannot continue to get work without earning their high wages:—

PRICE OF CARPENTER'S WORK—LABOUR ONLY.

The Labour Prices are calculated at the London rate of wages of 30s. per week; if the price of labour be more or less, add or deduct, for every 3s. per week increase or decrease, one-tenth of the following prices.

ROOFING. Per square.

	s.	d.
Common shed or lean-to, not exceeding 3 stories	3	0
Ditto, with purlines	3	6
Single span roofing, including pole-plates and ridges	4	0
Ditto, with purlines	4	6
Curb roofing, including curb and pole-plates, to be measured separate from the shed or span roofing	5	0
If any of the above exceed 30 feet from ground, add for every 10 feet above	0	5
Span roofing, with framed principals, collar-beams, and purlines, including plates and ridges	7	0
Ditto, framed principals, with beams, king-posts, purlines, braces, and common rafters, including pole-plates and ridges, the trusses 9 ft. apart	10	0
Ditto, with king and queen-posts ...	12	0
If above 30 feet from the ground, add for every 10 feet	0	8
Hips and vallies, per foot run ...	0	4
Hip and ridge roll, prepared and fixed with irons, ditto	0	2½
Cutting rafters' feet for dripping eaves ditto	0	1½
Fixing screw-bolts, each	0	6
Hanging ditto	1	6

If on irregular plan, to be charged accordingly.

Diagonal or dragging ties, angular do., and struts, as fir-framed.

QUARTER PARTITIONS. Per square.

	s.	d.
Common, not framed	3	0
Four-inch, framed and braced ...	4	0
Five-inch, ditto	5	0
Six-inch, ditto	5	6
If circular on plan, with door-heads, add	2	0
Framed and trussed, with king-posts	7	0
Ditto, with king and queens	8	6

FLOORS. Per square.

Girders, tie-beams, and binders, to be measured and charged extra as fir-framed.

	s.	d.
Common ceiling-floor (joists only) ...	3	0
Framed ditto to tie-beams or binders	4	0
Ditto, with tie-beams and binders ...	5	0
Single framed floors, trimmed to chimneys and well-holes	5	6
Ditto, above 9 inches deep	6	6
If trimmed to party-wall, or framed into girders or brestsomer, extra per square	1	6
Framed floors, with girders, binding, bridging, and ceiling-joists ...	15	0
Ground-joists, bedded, not framed ...	3	0
Ditto, pinned down on plates, and framed to chimneys	4	6
Trusses put in girders, 4 by 4, per foot run	1	0
Kings, queens, and wedges, each ...	3	0
Girders trussed one side with king and truss braces, per foot run ...	0	6
Ditto, on both sides	1	0
Girders sawed, reversed, and bolted	0	6
Strutting to joists	0	1
Fixing iron bolts, straps, &c., per lb	0	1

If any of the aforesaid works be in oak or elm, add one-third.

If on irregular plan, extra as per value.

FURRINGS OR BATTENINGS, properly backed. Per square.

	s.	d.
Three-quarter to 1½-inch, and 9 inches from centre to centre	3	6
Ditto, 12 inches ditto	3	0
Ditto, 15 inches ditto	2	9
If the stuff is to be ripped out, add per square	0	6
If to ceilings, laid crossways, add ...	0	9
If with plugs or wall-hooks, the battening 9 inches from centre to centre	1	6
Ditto, 12 inches ditto	1	3
Ditto, 15 inches ditto	1	0

Wall-hooks to be charged for each extra

	s.	d.
Quarter-battening, 3 by 2, to walls ...	3	6
Ditto, to window-fronts	4	0
If with plugs, add	1	0

If any of the above be circular on plan, 1½ the straight.

CENTRING, including the setting and striking.

	s.	d.
Common to vaults, per square ...	10	0
Ditto, if shifted and refixed	3	6
Groins to ditto, to be measured on the line of the points, and charged at per foot run extra	0	6
Centring to brick trimmers, bridgeways, &c., per foot super	0	3
Ditto for gauged brickwork, ditto ...	0	4
Ditto to 4-inch apertures, per foot run	0	1½
Ditto to 4-inch gauged arches, including strutting	0	2½
Ditto to circular heads	0	4
All rough arches, above 4 inches soffit, per foot super	0	5
Ditto elliptical, ditto	0	6

	s.	d.
All gauged arches, ditto	0	7
Ditto elliptical, ditto	0	8

The price of centring depends upon the quantity of work done.

Rough Boarding. Per square.

	s.	d.
Sound boarding, with single fillets ...	5	0
Ditto with double fillets	6	0
Three-qr. and inch rough boarding	2	6

Weather Boarding. Per square.

	s.	d.
Rough with boards	3	0
Ditto, with splayed edges	3	0

Sundries. Per foot run.

	s.	d.
Rough fillets and tilting, per foot run	0	0¼
Lead roll	0	2
Fixing iron-work, per lb	0	1

Fir Framed, &c. Per cube foot.

	s.	d.
Bond, plates, lintels, sleepers, and wood bricks	0	4

Bond and plates not to be taken running measure.

	s.	d.
Templates	0	6
Rough framed, in naked floors, roofs, &c.	0	6
Ditto in trusses	0	8
Timbers throughout the carcase of a building, including bond and plates, small scantlings	0	6
Ditto, large scantlings	0	5
Planing, per foot super	0	0¼
Ditto, including squaring	0	1
Sunk rabbets, per foot run	0	0¼
Ditto, 3 by 1½	0	0½
Beads to ¾-inch diameter	0	0¼
Ditto, above ¾ to 1½ inch	0	0½

If beads are returned, double the price.

	s.	d.
Common door cases, not rebated, up to 25 feet super on the face, per foot super	0	1
Proper ditto, including oak sills ...	0	1½

Bracketing: including plugging. Per foot super.

	s.	d.
To cornices and coves	0	3
Ditto, circular on plan	0	4½

Gutters and Bearers. Per foot super.

	s.	d.
Inch and 1½-inch deal	0	3
Ditto, to curb roof	0	4
Ditto, circular on plan	0	5
If with bridged bearers, add	0	1
Framed bearers for trough gutters between plates, per foot run ...	0	1½
Laps rebated for lead, each ...	0	3
Cesspools ditto	0	9

PRICE OF JOINER'S WORK—LABOUR ONLY.

Prepared Boards,—from the Bench. Each

	12 feet. s.	12 feet. d.	14 feet. s.	14 feet. d.	16 feet. s.	16 feet. d.
Three-quarter or inch deal prepared floor boards wrought, and thicknessed	0	3	0	4	0	5
One-and-quarter or 1½-inch ditto	0	3½	0	4½	0	5½
Two-cut or inch battens ditto	0	2½	0	3	0	3½
One-and-quarter or 1½-inch ditto	0	2½	0	3½	0	4
Three-quarter or inch deal wrought and rebated or tongued	0	3½	0	5	0	6
One-and-quarter or 1½-inch ditto	0	4½	0	6	0	7
Inch 2-cut, or battens wrought and rebated, or tongued	0	3	0	4	0	5
One-and-quarter or 1½ ditto	0	4	0	5	0	6
If listed, add for each	0	0½	0	0¾	0	1
Three-quarter-inch deal wrought, grooved, tongued, and beaded linings	0	5	0	6	0	7
Three-quarter-inch plank ditto	0	6	0	7	0	8

Deal Floors. Per square.

	s.	d.
Inch deal wrought and laid folding...	6	0
Ditto straight joint, with splayed headings	7	6
One-and-quarter-inch ditto, folding	6	6
Ditto straight joint	8	0
One-and-half-inch ditto, folding ...	7	0
Ditto straight joint	9	0
If any of the above be tongued headings instead of splayed, add ...	1	0
If ploughed and tongued, or rebated and filleted, add on the 1¼ in.	2	6
Ditto 1½ inch	3	0

Rough floors—see Carpenter.

Batten Floors. Per square.

	s.	d.
Two-cut or inch wrought and laid folding	6	6
Ditto straight joint and splayed headings	8	6

	s.	d.
One-and-quarter-inch wrought folding	8	0
Ditto straight joint, splayed headings	10	0
Ditto tongued headings and edge-nailed	13	0
Ditto dowelled single	20	0
Ditto double	23	0
Ditto well matched	26	0
Ditto with battens less than 5-inch gauge, add	3	0

SKIRTINGS. Per foot super.

(Including backings and fillets complete.)

	s.	d.
Three-quarter and inch deal, plain or square	0	2
Ditto raking and scribed to steps	0	3
Ditto ramped	0	5
Ditto torus or single-moulded	0	2½
Ditto raking and scribed to steps	0	4
Ditto ramped	0	6
Rebated plinth, including fillet nailed on floor and backings	0	2¾
Ditto raking and scribed to steps	0	4
Ditto ramped	0	6
Plain level circular skirting	0	6
Raking ditto, and scribed to steps	0	9
Level circular torus skirting	0	8
Raking ditto, and scribing	1	1
Level circular, rebated and backed plinth	0	8
Raking ditto, scribed	1	1
Circular plinth, ploughed, glued, and blocked upon a cylinder	1	2
Ditto raking and scribed	1	9
Level circular, torus plinth, glued and blocked upon a cylinder and backed	1	8
Raking ditto	2	8
If any of the above be scribed to moulded nosing or stone steps, add	0	1
If rebated to form double plinth, add on the straight	0	1
Ditto circular	0	2
Ditto ramped	0	3
Ditto writhed	0	4
If plugged, add	0	1

All skirtings under 4½-in. wide, to be measured and charged as 4½-in. wide.

Cylinders to be paid for extra.

	s.	d.
Inch deal narrow grounds, ploughed, per foot run	0	0¾
Ditto circular	0	2
Ditto ramped	0	3

STAIRCASES. Per foot super.

	s.	d.
One and 1½-inch rough deal treads and risers, including bracketing	0	2½
Ditto wrought deal treads and risers, glued, blocked, and bracketed for plastering	0	3½
Ditto with two carriages	0	4½
One and 1½-inch treads and risers, glued up and blocked to close string, moulded nosing	0	4½
Ditto with carriages	0	5½
Ditto mitred to cut string, and dovetailed for balusters	0	7
Ditto to winders, circular one end	0	8½
Ditto both ends	0	11
Extra, if riser be tongued to step, bottom edge	0	0½
Ditto both edges	0	1
Extra, if feather-tongued joints	0	0¾
One and a half-inch deal wrought treads, risers, and carriages	0	5
Two-inch rough ditto for warehouses	0	6
Ditto wrought	0	8
Solid quarter-round ends to steps, each	1	6
Veneered ditto	3	0
Ditto to curtail ends	10	0
Returned moulded nosings	0	3
Circular ditto	0	5
Beaded gusset-pieces	0	6
Plain cut brackets	0	6
Circular ditto	0	10
Housing steps, and wedging up into string-board, each	0	2½
Ditto moulded nosing	0	3
Winders, double.		

STRING BOARDS. Per foot super.

	s.	d.
Inch and 1½-inch plain outside string, framed to newels	0	3½
Ditto rebated and beaded	0	4
Ditto and sunk face	0	5
Ditto sunk and mitred	0	6½
If the sinking be moulded, add	0	0½
If 1½-inch string, add	0	1
One-and-half-inch writhed outside string, glued upright, rebated and beaded	3	0
Ditto and sunk	3	6
Ditto and moulded	4	0

If glued up in thicknesses on a cylinder, add one-sixth.

For every inch less than 12 inches opening, add one-tenth.

	s.	d.
One-and-quarter and 1½-inch plain wall string and plugging	0	3½
Ditto ramped	0	7
Ditto swan-neck or level circular	0	10½
Ditto writhed (glued upright)	1	9
Ditto glued in thicknesses on a cylinder	2	3
One-and-quarter and 1½-inch moulded wall string and plugging	0	4½
Ditto ramped	0	9
Ditto writhed	2	0
Two-inch plain wall string and plugging	0	4½
Ditto ramped	0	8½
Ditto writhed	2	6
Two-inch moulded wall string	0	5½

	s.	d.
Two-in. moulded wall string, ramped	0	10
Ditto writhed	3	0

Measure mouldings which may be laid into sinkings in addition.

	s.	d.
If double reeds flush, or rebated to form a ground, add to the straight	0	0½
Ditto ramped	0	1
Ditto writhed	0	2½
Square bar baluster, per foot run ...	0	1¼
Ditto dovetailed	0	1½
Plancere rounded both edges ...	0	1
Ditto moulded	0	1½
Framed newel	0	3
Ditto chamfered	0	5
Fixing iron newels, each	2	0
Ditto iron balusters	1	0
Ditto iron stays	0	4

HAND-RAILS. Per foot run.

(In measuring the rail, keep the line along the centre to the top of the rail.)

	s.	d.
Deal hand-rail for warehouses ...	0	3½
Deal moulded hand-rail	0	4
Ditto ramped	1	0
Ditto swan-neck or level circular ...	1	3
Ditto writhed	3	0
Ditto moulded, grooved, and beaded	0	5
Ditto ramped	1	3
Ditto swan-neck or level circular ...	1	6
Ditto writhed	3	6
Wainscot or honduras mahogany rail moulded	0	7
Ditto ramped	1	10
Wainscot or honduras mahogany rail, grooved and beaded	0	8
Ditto ramped	2	0
Ditto swan-neck or level circular ...	3	0
Ditto writhed or twist	6	0
Spanish mahogany moulded rail ...	0	10
Ditto ramped	2	6
Spanish mahogany moulded rail, grooved and beaded	1	0
Ditto ramped	3	0
Ditto swan-neck or level circular ...	3	6
Ditto writhed	7	0

If less than 12-inch opening, add for every inch one twelfth.

Half rails two thirds of the above.

	s.	d.
Extra to sinking and fitting hand-rail to iron core, per foot run ...	0	2
Ditto circular ramped or writhed ...	0	6
Mitred and turned caps in deal, each	0	9
Ditto in wainscot or mahogany ...	1	3
Ditto spanish mahogany	1	6

If worked by hand, add one fourth.

	s.	d.
Joint screws, each	0	6

PARTITIONS, including fascia and skirting. Per foot super.

	s.	d.
Inch and 1¼-board and brace	0	3
One-and-half ditto, with alternate boards ¾-inch	0	3½
One-and-quarter and 1½ inch square framed	0	4
Ditto bead butt, or moulded and square	0	4½
Ditto bead flush and square	0	5
Ditto two or three reeds flush or raised mouldings and square ...	0	5½
Ditto bead butt, or moulded both sides	0	5
Ditto bead flush both sides	0	5½
Ditto two or three reeds flush or raised mouldings both sides ...	0	6½
Two and 2½-inch square framed ...	0	4½
Ditto bead butt, or moulded and square	0	5
Ditto bead flush and square	0	5½
Ditto two or three reeds flush or raised mouldings and square ...	0	6
If any of the above be moulded on the reversed side, or on both sides, add	0	0½
Ditto bead flush both sides	0	6½
Ditto two or three reeds flush both sides	0	6

Circular on plan, ¼-inch rise, twice the above.

Ditto, ½-inch rise, 2½ ditto.

Small quadrant ends, thrice ditto.

SASH FRAMES. Per foot super.

	s.	d.
Deal cased frames, oak sunk sills for 1½ or 2-inch sashes, prepared to hang single	0	3
Ditto double	0	3½
Ditto, circular on plan, ¼-inch rise to a foot	0	6
Ditto ditto, ½-inch rise	0	8
Ditto circular head, measured square	0	10
Ditto ditto, and circular on plan, ¼-inch rise	2	8
Ditto ditto, ½-inch rise	2	11

SASHES AND FRAMES. Per foot super.

To be measured out and out each way, and one inch allowed for meeting bar.

Circular heads to be measured square from the springing, and charged separately.

	s.	d.
Deal cased frames, oak sunk sills, and 1½-inch ovolo sashes, single hung...	0	5½
Ditto, double hung	0	6
Ditto and 2-inch ovolo sashes ...	0	6½
Ditto circular on plan, ¼-inch rise to a foot	1	0
Ditto, ½-inch rise	1	2
Ditto circular head	1	9
Ditto down to chord bar in thicknesses	2	0
Ditto circular head and circular on plan, ¼-inch rise	4	1
Ditto ½-inch rise	4	10
Deal cased frames, oak sunk sills, and 2-inch ovolo sashes, with circular and straight top-rail, and spandrel lights, frame square inside	1	8

	s.	d.
Deal cased frames, oak sunk sills, and 2-inch ovolo sashes, in thicknesses to chord bar	2	0
Ditto ditto, circular on plan, ¼-inch rise	4	0
Ditto ditto, ½-inch rise	4	9
If 2½-inch deal, add	0	1
If astragal and hollow, add	0	0½
If with marginal lights or rail ...	0	1
For Venetian windows, add	0	2
Deal-cased frames, oak-sunk sills, wainscot or mahogany pulley-pieces, beads, and 1½-inch ovolo sashes, double hung	0	8½
Ditto and 2-inch ovolo sashes ...	0	9
Ditto circular on plan, ¼-inch rise ...	1	4
Ditto ½-inch rise	1	7
Ditto circular head	2	5
Ditto ditto in thicknesses	2	8
Ditto circular head, and circular on plan, ¼-inch rise	4	7
Ditto ditto, ½-inch rise	5	0
Ditto with circular and straight top-rail and spandrel-lights, frame square inside	1	11
Ditto with circular bar, in thicknesses	2	3
Ditto ditto, and circular on plan, ¼-in. rise	3	9
Ditto ½-inch rise	4	4
If 2½-inch wainscot, add	0	1½
If astragal and hollow, add	0	0¾
If with marginal lights or rail, add	0	1½
For Venetian windows, add	0	3

Honduras mahogany sashes and frames, same prices as wainscot.

For Spanish mahogany ditto, add one-sixth on the wainscot.

SKYLIGHTS. At per foot super.

	s.	d.
One and a half and 2-inch ovolo straight bar	0	3½
Ditto with cross bars	0	5
Ditto astragal and hollow	0	4
Ditto ditto with cross bars	0	5½
Two-and-half-inch deal ovolo straight bar	0	4
Ditto ditto astragal and hollow ...	0	4½
Two-inch oak ovolo straight bar ...	0	5
Two-and-half-inch ditto	0	5½
If irregular plan, add	0	1½
For hipped skylights, measure the hips, and charge them for deal, at per foot run	0	9
Ditto for oak	1	0

SKYLIGHT CURBS.

	s.	d.
One-and-half or 2-inch deal, in two thicknesses, to circular skylights, per foot run	0	5
Ditto on elliptical skylight	0	6½
If bevelled and chamfered, add ...	0	1½

FRIEZE AND CRADLING. Per foot super.

	s.	d.
Cradling to entablatures	0	4
Ditto ploughed & tongued blockings	0	5
One-and-quarter-inch keyed and wrought frieze, joints feather-tongued, lower edge rebated or tongued for soffit	0	6
Ditto with double break	0	7

Circular work as "SHUTTERS."

DEAL-FRAMED BACK LININGS. Per foot sup.

	s.	d.
Inch and 1¼-inch 2 and 3 panel square	0	5½
Ditto bead butt	0	6
Ditto bead flush	0	6½
If more than 3 panels, add for each...	0	1
If splayed plan, add	0	0½

BACKS, ELBOWS, AND SOFFITS.

Grooved and tongued, at per foot super.

	s.	d.
Inch and 1¼-inch backs only, square framed	0	5½
Ditto circular on plan, ¼-inch rise ...	0	8
Ditto ½-inch rise	0	10
Backs only, bead butt	0	6
Ditto moulded, or bead flush	0	6½
Ditto circular on plan, ¼-inch rise ...	0	8½
Ditto ½-inch rise	1	0
If raised moulded, add	0	0½
If 1½-inch, add	0	1
One-and-quarter and 1½-inch soffits only, square framed	0	6
Ditto circular one edge	0	11
Ditto two edges	1	8
Ditto to semi-circular head in two panels, veneered rails...	2	10
Ditto flewing	4	0
Soffits only, bead butt or moulded ...	0	6½
Ditto bead flush	0	7
Ditto circular one edge	1	0
Ditto ditto two edges	1	5
Ditto to semi-circular head in two panels, veneered rails, canvassed joints	3	1
Ditto ditto and flewing	4	6
If raised moulded, add	0	0¾
If splayed on plan, add	0	1
Inch and 1¼-inch plain keyed backs and elbows	0	4
Inch and 1¼-inch backs, elbows, and soffits, square framed	0	6
Ditto bead butt	0	6½
Ditto bead flush or moulded	0	7
If 1½-inch deal ditto, add	0	0½
If splayed plan, add	0	0½
Beaded and tongued capping, per foot run	0	1½
Double reeded or moulded ditto ...	0	2
Elbow caps, each	0	3
Narrow facias over shutters, each ...	0	6

INSIDE SHUTTERS. Per foot super.

	s.	d.
Three-quarter-inch and inch deal, ledged, rebated, and beaded to lift	0	5½

	s.	d.
Three-quarter-inch and inch deal, clamped in one height	0	5½
Ditto mortise clamped	0	6
One-inch and 1¼-inch 2-panel square, in one height	0	6
Ditto bead butt and square	0	6½
Ditto moulded or bead flush and square	0	7
Ditto moulded and bead butt ...	0	7½
Ditto moulded and bead flush ...	0	8
Ditto bead flush or moulded both sides	0	8½
If raised moulded, add ...	0	0½
If 1½-inch deal	0	0½
For every extra panel, add	0	0½
For every extra height, add	0	1
If prepared to cut with a cross bead...	0	0½

If the shutters be less than 9 inches wide, add one-third to the above prices.

Shutters hung with Lines and Weights. Per foot super.

	s.	d.
Inch and 1¼-inch 2-panel square ...	0	5½
Ditto bead butt and square	0	6
Ditto moulded or bead, flush and square	0	6½
Ditto two or three reeds flush or raised moulded and square... ...	0	8¾
Ditto bead butt and moulded ...	0	7½
Ditto moulded both sides	0	8
If 1½-inch deal, add	0	0½
If frieze panels, add	0	1
If double margined, add	0	1½

Boxings to Windows. Per foot run.

Measured net—tenons not to be taken.

	s.	d.
Inch and 1¼-inch framed, rebated and beaded	0	2
Ditto and splayed	0	2½
One-and-half-inch ditto	0	2¾
Circular on plan, head only, ¼-inch rise, per foot run	0	7
Ditto ½-inch ditto	0	9
Ditto glued in thicknesses	1	0
Boxings for sliding shutters, with pulley pieces, beads and fillets, per foot run	0	7½

Framed Grounds. Per foot super.

	s.	d.
Inch and 1¼ inch framed and ploughed, or splayed for plastering	0	4½
Ditto head circular on plan, ¼-inch rise	1	0
Ditto ½-inch rise	1	2
Ditto circular head	1	0
Ditto elliptical	1	3
Inch and 1¼-inch skeleton grounds...	0	3½
One-and-half-inch ditto	0	4
Two-inch ditto	0	4½
If back rebated, add	0	0½
If beaded on edge, add	0	0½
If mitred, add	0	1

Deal Door Linings. Per foot super.

	s.	d.
Inch and 1¼-inch single rebated ...	0	4
Ditto to head, circular on plan, one edge...	0	7
Ditto ditto, two edges	0	10
Ditto double rebated	0	4½
Ditto to head, circular on plan, one edge...	0	8
Ditto ditto, both edges	0	11
If beaded, add for each edge	0	0¾
Square framed jambs and soffit, each in one panel and double rebated ...	0	6½
Ditto bead butt	0	7
Ditto moulded or bead flush	0	7½
Ditto two or three reeds flush or raised moulded	0	8
For every additional panel, add ...	0	0¾
If ditto be frieze panels	0	1

Circular soffits to be charged as window soffits.

Ledged Doors and Traps. Per foot super.

	s.	d.
Three-quarter and inch deal rough, edges shot	0	2½
Ditto tongued	0	3
Ditto wrought	0	3½
Ditto ditto tongued and beaded ...	0	4
If 1¼ or 1½-inch deal, add	0	0¾
If braced, add	0	0¾
If hung folding, add	0	0½
If in two heights, add	0	1

Cellar Flaps. Per foot super.

	s.	d.
One-and-half-inch deal wrought and tongued, with 1½ ledges	0	7½
Two-inch deal wrought, tongued, and ledged	0	9

If oak, once and a half the above.

	s.	d.
Letting in ledges on the curb, each...	0	2½

Gates and Coach-house Doors. Per foot super.

	s.	d.
Two-inch framed, ledged, and braced, filled in with inch-deal, ploughed, tongued, and beaded	0	6½
Ditto with battens	0	7
Ditto with narrow width	0	7½
If 2½-inch, add	0	1
If 3-inch, add	0	1½
Two-inch framed bead butt and square in twelve panels the pair	1	0
Ditto bead flush and square	1	1
Ditto two or three reeds flush and square	1	2
Ditto bead flush and bead butt ...	1	3
Ditto bead flush both sides	1	4
If 2½-inch deal, add	0	1½
If 3-inch deal	0	2½
For every additional panel, add ...	0	0¾
Two-inch wicket gates to be charged for each extra	6	0
Two-and-half and 3-inch-ditto ...	7	0

DEAL FRAMED DOORS. Per foot super.

Inch and one-and-quarter-inch Two-panel Doors.

	s.	d.
Square framed	0	3¾
Ditto and bead butt	0	4¼
Ditto and bead flush or moulded ...	0	4¾
Ditto and bead butt	0	5¼
Moulded both sides	0	5¾
If 1½-inch deals, add	0	0½
If raised mouldings, add for each side	0	0¼

For dwarf one-panel doors, add one-fourth.

One-and-quarter and one-and-half-inch Four-panel Doors.

	s.	d.
Skeleton door	0	4
Framed, with flush panels for balze	0	5
Square framed	0	4½
Ditto and bead butt	0	5
Ditto and bead flush or moulded ...	0	5½
Ditto and two or three reeds flush ...	0	6
Ditto and raised moulded	0	6½
If any of the above be moulded on the back instead of square, add ...	0	0¾
Ditto raised moulded, add	0	1¼
Bead butt both sides	0	5½
Ditto and bead flush	0	6
Bead flush both sides	0	6½
If hung folding, add	0	1

Two-inch Four-panel Doors.

	s.	d.
Skeleton doors	0	4
Framed, with flush panels for balze	0	6
Square framed	0	5
Ditto and bead butt	0	5½
Ditto and bead flush or moulded ...	0	6
Ditto and two or three reeds flush ...	0	6½
Ditto and flush for raised panels, the sinkings to be charged extra ...	0	5½
Ditto and raised moulded	0	6½
If any of the above be moulded on the back instead of square, add ...	0	1
Ditto raised moulded	0	2
Bead butt both sides	0	6
Ditto and bead flush	0	6½
Bead flush both sides	0	7½
Two or three reeds flush ditto ...	0	8½
Flush both sides for raised panels ...	0	5½
External doors, the lower panels bead flush and square, and upper panels square both sides	0	6
Ditto bead butt on the back	0	6½
Ditto bead flush ditto	0	7
If the two upper panels have quirked mouldings one side, add	0	0¾
If raised ditto	0	1¼

Two-inch Six-panel Doors.

	s.	d.
Skeleton doors	0	5
Framed, with flush panels for balze	0	7
Square framed	0	6
Ditto and bead butt	0	6½
Ditto and bead flush or moulded ...	0	7
Square-framed and two or three reeds flush	0	8
Ditto and flush for raised panels, the sinkings to be charged extra ...	0	6½
Ditto and raised moulded	0	8¾
If any of the above be moulded on the back instead of square, add ...	0	1½
Ditto raised moulded	0	2½
Bead butt both sides	0	7½
Ditto and bead flush	0	8
Bead flush both sides	0	9¾
Flush both sides for raised panels ...	0	7
External doors, the lower panels bead flush and square, and the four upper panels square both sides for mouldings	0	7½
Ditto bead butt on the back	0	8½
Ditto bead flush ditto	0	9½
If the four upper panels be quirk moulded, add	0	1
If ditto be raised moulded, add ...	0	1½
If ditto be flushed for raised panels, add	0	1
If any of the above be hung folding, add	0	1
If double-margined rail, add	0	1½
Sinking with quarter round or ovolo moulding to raised panels, to be measured on the extreme of the mitre, and charged at per foot run extra	0	8
If with quirked moulding	0	8½
If moulded on the raising, add ...	0	1½
Two-and-half-inch deal doors add on the two-inch	0	1¼
For doors flush both sides, add ...	0	1½

DEAL SASH DOORS.

	s.	d.
One-and-half-inch ovolo sash, square framed bottom panels	0	5½
Ditto bead butt and square	0	5¾
Ditto and bead flush and square ...	0	6
Ditto moulded and ditto	0	6
Ditto raised moulded and ditto ...	0	6¾
Two-inch ovolo sash, lower panels square framed	0	6
Ditto bead butt and square	0	6¼
Ditto bead flush and ditto	0	6½
Ditto moulded and ditto	0	6½
Ditto raised moulded and ditto ...	0	7
Two-inch sash doors, panels square framed, diminished styles, with shutter-framed bead butt, and ovolo sash rebated and fixed in	1	2
Ditto bead butt and square	1	2½
Ditto bead flush and ditto	1	3½
Ditto two or three reels flush and square	1	4
Ditto moulded and square	1	2½
Ditto raised moulded and square ...	1	3½
If 2½-inch deal door, add	0	2
If diminished styles, add	0	0½

	s.	d.
If astragal and hollow, add	0	0½
If skeleton doors with diminished rails, deduct	0	1
If hung folding, add	0	1
If double margined, add	0	1½
If any of the above be moulded on the back instead of square, add ...	0	0½
Ditto raised moulded, add	0	1

141. **The following Memoranda** are useful in estimating joinery-work to be done.

One hundred (120) 12 feet by 3-inch deals, by 9 inches wide, are equal to 5 loads and 2-5ths.

One hundred (120) 12 feet by 2½-inch deals, 9 inches wide, are equal to 4½ loads.

One load of 1½-inch plank or deals is 400 feet superficial.

One load of 2-inch plank or deals is 300 feet superficial.

A square of flooring takes :—

	24	boards	10	feet by	5	inches.
"	20	"	10	"	6	"
"	17	"	10	"	7	"
"	15	"	10	"	8	"
"	13½	"	10	"	9	"
"	12½	"	10	"	10	"
"	20	"	12	"	5	"
"	16	"	12	"	6	"
"	14	"	12	"	7	"
"	12½	"	12	"	8	"
"	11½	"	12	"	9	"
"	10½	"	12	"	10	"

A reduced deal is 1½ thick, 12 feet long, 11 inches wide.

142. **The Wages**, per day, of carpenters and joiners, vary in different parts of the country from 3s. 6d. to 8s., which latter is the usual rate of staircase-hands when employed by the day. In almost all cases, however, these journeymen work by the piece, and either have so much for the whole work, or else a certain rate per stair. By a reference to the preceding tables, it is tolerably easy to ascertain whether the day workers have earned their wages; and inasmuch as the work is there estimated at a very liberal rate, if they do not work so as to earn what is there allotted to them, they are not worth theis pay.

Sect. 7.—The Blacksmith and Ironmonger.

143. **The Blacksmith's Work** is required chiefly for the purpose of bolting together the various parts of roofs and floors, also for finding chimney-bars, &c. Nails and screws, likewise, are obtained from the ironmonger; but, as these things are always paid by the piece, there is no necessity for alluding to them further here, except as being needed for this kind of work. Wrought-iron chimney-bars, iron ties, screw-bolts, balusters with straps, area-gratings, hand-rails and balusters, hook-and-eye hinges, brackets for shelves, chains for posts, wrought-iron columns, fancy iron railing, &c., are charged by the pound, at various prices, according to the nature of the work. Nails and brads are charged by the hundred, though sold by weight seldom exceeding 900 to the 1000. Screws, distinguished by their length in inches, are charged by the dozen; hinges, by the pair; bolts and screws, of which the smooth part fixes the length, by the inch; locks, by the piece; pulleys, according to their diameter. Locks are made in various ways, as follows:—The *stock-lock*, in which the case is of wood, varying in size from 7 to 10 inches; *dead-locks*, whose sizes are from 4 to 7 inches, and so called from the key shooting the bolt home dead without a spring; *cupboard locks*, of 3, 3½, and 4 inches in size; *iron rim locks*, whose box or case is made of iron, and which are fitted on to one of the sides of a door, and in size from 6 to 8 inches. Some of these last are used for external doors of a large size, called *iron rim drawback locks* For the doors of all well-finished apartments, *mortise locks* are used; they take their name from being fixed into a mortise formed in the frame of the door. To these either plain or fancy furniture is applied, consisting of knobs and escutcheons, with finger plates. There are, also, various sorts of *latches*, as the *thumb latch*, the *Norfolk latch*, the *bow latch*, the *pulpit latch*, and the *mortise latch*.

144. **To Preserve Iron from Rust**, the following composition is very useful, applied as a paint upon the whole surface exposed: Take half a pound of litharge, and add it to 2 lb. of boiling linseed oil slowly and cautiously. Let it simmer slowly over the fire two or three hours; then strain and add of finely-powdered resin a quarter of a pound, and a pound of white lead. Keep it at a gentle heat until thoroughly mixed, and use while hot.

145. **Cast-iron Work**, when cast to order, is always charged at per lb or cwt. The models are prepared by the joiner, and sent to the foundry, where they are cast and charged by weight. Manufactured goods, as cast-iron grates, &c., are charged either per piece or per inch, according to the quality of the work. As the value of the labour is very much greater than that of the material, in all ironmonger's goods, they are here given instead of in the chapter on metals.

PRICE OF GRATES.

		s.	d.
Common elliptic stoves, with inside backs	per inch	0	2½
Dining and drawing-room ditto	,,	0	6
Bed-room register stoves	,,	0	5
Cottage ranges, with oven or boiler	each	22	0
Self-acting ditto, with ditto	,,	25	0
Small self-acting oven and boiler ranges	each	45	0

Neat ornamental register grates, from 30s. to £4.

Handsome ditto, from £6 to £10.

Dr. Arnott's smoke-consuming grate, from £2 10s. to £7 7s.

RAIN-WATER CASTINGS. Per yard

		s.	d.
Rain pipes	3 inches	1	4
Half-round gutters	,,	0	8
CG gutters	,,	1	0

Sash weights, 7s. 6d. per cwt.

Furnace pans, 12s.

Galvanized ditto, 20s.

9-inch air-bricks, 3s. 6d. per dozen.

The following list of prices in IRONMONGERY is calculated at the highest prices of the day in London:—

NAILS.

Weight and Price per Thousand.

Note.—Nails are sold by the ironmongers generally by weight, but what is weighed out for 1000 rarely exceeds 900 nails; therefore allowance must be made in the following prices for the deficiency.

CUT TACKS.

		s.	d.
⅜ and ½-inch	per thousand	0	6
⅝-inch	,,	0	8
¾-inch	,,	0	10
8-oz. flemish	,,	1	3
14-oz. ditto	,,	1	6
Tinned, extra	,,	0	2

CUT BRADS.

		s.	d.
½-inch	,,	0	4
¾-inch	,,	0	5
Inch	,,	0	6
1¼-inch	,,	0	7
1½-inch	,,	0	8
1¾-inch	,,	0	10

FINE ROSE.

		s.	d.
1¼-inch	,,	1	0
1½-inch	,,	1	2
1¾-inch	,,	1	7
2-inch	,,	2	0
2¼-inch	,,	2	4
2½-inch	,,	2	10
2¾-inch	,,	3	9
3-inch	,,	4	6

CLOUT NAILS. / FINE CLOUT.

	Weight.	s.	d.	Weight.	s.	d.
2d.	1½ lb.	1	4	1½ lb.	1	6
3d.	2 lb.	1	7	2 lb.	1	9
4d.	4 lb.	2	0	3 lb.	2	0
6d.	7 lb.	2	10	5 lb.	2	9
8d.	12 lb.	4	6	7 lb.	3	3

FINE CLASP. / CUT CLASP.

	Weight.	s.	d.	Weight.	s.	d.
3d.	2 lb.	1	9	2 lb.	0	9
4d.	3 lb.	2	0	2¾ lb.	1	0
6d.	5 lb.	2	9	4 lb.	1	4
8d.	7 lb.	3	3	7 lb.	2	0
10d.	10 lb.	4	3	8 lb.	2	3
20d.	18 lb.	6	3	14 lb.	3	6

	s.	d.
2½ to 5-inch, per cwt., cut	21	0
Ditto, wrought	25	0

WROUGHT FLOORING BRADS. Per thousand.

Length.	Weight.	For	s.	d.
2-inch	8 lb.	¾-inch floors	3	0
2¼-inch	10 lb.	1-inch ,,	3	3
2½-inch	12 lb.	ditto ,,	3	6
2¾-inch	16 lb.	1¼-inch ,,	4	9
3-inch	20 lb.	1½-inch ,,	5	9

PATENT CUT FLOORING BRADS.

Length.	Weight.	For	s.	d.
2-inch	8 lb.	¾-inch floors	2	0
2¼-inch	10 lb.	1-inch ,,	2	6
2½-inch	12 lb.	ditto ,,	3	0
2¾-inch	15 lb.	1¼-inch ,,	3	9
3-inch	18 lb.	1½-inch ,,	4	6

FLAT POINTS.

		s.	d.
3½-inch	per cwt.	26	0
4-inch	,,	25	0
4½ and 5-inch	,,	25	0
Spikes	,,	23	0
If galvanized, add	,,	12	0
Cast lath nails	,,	17	0
Cut ditto	,,	25	0

NAILS AND BRADS. In small quantities.

		s.	d.
4d.	per hundred	0	4
6d.	,,	0	6
8d.	,,	0	8
10d.	,,	0	10
20d.	,,	1	8
30d.	,,	2	6
5-inch spikes	per dozen	0	7
6-inch ditto	,,	0	9
7-inch ditto	,,	1	3
Spikes	per lb.	0	3
Holdfasts and wall-hooks	each	0	1½
Ditto ditto	per lb.	0	4

BRASS-HEADED NAILS.

		s.	d.
¾-inch	per hundred	1	0
1-inch	,,	1	4
1¼-inch	,,	1	8
1½-inch	,,	2	0

BRASS-HEADED NAILS.

		s. d.
2-inch	per hundred	2 6
2½-inch	„	3 6
3-inch	„	4 6

For galvanized nails, add 2d. per lb.

SCREWS. Per dozen.

	Iron. s. d.	Brass. s. d.
¾-inch	0 1½	0 4
1-inch	0 2	0 5
1¼-inch	0 3	0 7
1½-inch	0 4	0 8
1¾-inch	0 5	0 9
2-inch	0 6	0 10
2½-inch	0 8	—
3-inch	0 10	—
3½-inch	1 0	—
4-inch	1 4	—

Gilt-headed screws double.

	s. d.
5-inch bed screws	1 3
6-inch „	1 6
7-inch „	1 9
8-inch „	2 0
9-inch „	2 3
10-inch „	2 6

SASH PULLIES.

	Iron. s. d.	Brass. s. d.	Brass Axles. s. d.
1¼-inch	0 3	0 6	1 0
1¾-inch	0 4	0 8	1 3

SASH PULLIES.

	Iron. s. d.	Brass. s. d.	Brass Axles. s. d.
2-inch	0 5	0 10	1 6
2¼-inch	0 6	1 3	2 3

IRON BOLTS, including screws. Each.

	Barrel. s. d.	Rough Rod. s. d.	Bright Rod. s. d.	Spring Plate. s. d.
3-inch	0 9	0 4	0 6	0 4
4-inch	1 0	0 6	0 8	0 6
5-inch	1 2	0 8	0 9	0 7
6-inch	1 4	0 9	0 10	0 8
7-inch	1 6	0 10	1 0	0 10
8-inch	1 8	1 0	1 2	1 0
9-inch	1 10	1 2	1 4	—
10-inch	2 0	1 3	1 6	—

BRASS FLUSH BOLTS.

	½-inch. s. d.	¾-inch. s. d.	1-inch. s. d.
2½-inch	0 5	0 6	0 7
3-inch	0 6	0 8	0 9
4-inch	0 8	0 10	1 0
5-inch	0 10	1 0	1 3
6-inch	1 0	1 3	1 6
7-inch	1 2	1 6	1 9
8-inch	1 4	1 8	2 0
9-inch	1 6	1 10	2 3
10-inch	1 8	2 0	2 6
12-inch	2 0	2 3	3 0
18-inch	3 0	3 6	4 6
24-inch	4 0	5 0	6 0

HINGES.

Per pair including Screws.

BUTTS AND BACK-FLAPS.

	Cast Iron. s. d.	Wrt. Iron. s. d.	Brass. s. d.
1-inch	0 2	0 3	0 6
1¼-inch	0 3	0 4	0 8
1½-inch	0 4	0 5	0 9
2-inch	0 6	0 8	1 0
2½-inch	0 8	0 10	1 6
3-inch	0 8	1 0	2 0
3½-inch	0 10	1 3	2 9
4-inch	1 0	1 9	3 6
4½-inch	1 6	2 6	4 0
5-inch	2 0	3 0	5 0

RISING SKEW BUTTS.

		Iron. s. d.	Brass. s. d.
3-inch	per pair	1 8	10 0
3½-inch	„	2 0	12 10
4-inch	„	2 6	14 0
4½-inch	„	3 0	16 0
5-inch	„	3 6	20 0

BRASS PROJECTING BUTTS.

Height.	Width.		s. d.
3-inch	by 2½-inch	per pair	2 10
3½-inch	by 3-inch	„	4 8
4-inch	by 3½-inch	„	5 10

BRASS PROJECTING BUTTS.

Height.	Width.		s. d.
4½-inch	by 2¾-inch	per pair	7 2
5-inch	by 4-inch	„	9 4
3-inch	by 4-inch	„	5 6
3½-inch	by 4½-inch	„	6 6
4-inch	by 5-inch	„	8 6
4½-inch	by 5½-inch	„	11 0
5-inch	by 6-inch	„	15 0

CROSS GARNETS AND HINGES. With hooks.

		s. d.
10-inch, strong	per pair	0 8
12-inch ditto	„	0 10
14-inch ditto	„	1 0
16-inch ditto	„	1 6
18-inch ditto	„	1 9
20-inch ditto	„	2 3
Larger sizes	per lb.	0 5½

To be measured from the joint.

PARLIAMENT HINGES.

		Cast. s. d.	Wrt. s. d.
3½-inch	per pair	1 4	1 9
4-inch	„	1 6	2 0
4½-inch	„	1 10	2 3
5-inch	„	2 0	2 6

	s.	d.
4-inch Redmund's, for 1½-inch shutters	2	8
Ditto, for 2-inch ditto	2	6
Ditto, for 4½-inch reveal	3	6

H. AND H. L. HINGES. Per pair.

	s.	d.
4-inch	0	8
5-inch	0	10
6-inch	1	0
7-inch	1	2
8-inch	1	4
9-inch	1	6
10-inch	1	8
11-inch	1	10
12-inch	2	0
14-inch	2	3
Larger, per lb.	0	8

CIRCULAR DOOR SPRINGS.

	Brass. s. d.	Iron. s. d.
Small size	6 0	3 6
Middle size	7 0	4 0
Large size	8 0	4 6
4-inch door spring hinge	10 0	—

SWING CENTRES FOR DOORS, double action to open both ways.

		s.	d.
Smith's patent	each	38	0
Ditto, extra large	,,	68	0
Redmund's, for 2-inch doors	,,	30	0
Ditto, for 2½-inch ditto ...	,,	33	0
Gerish's	,,	30	0

REDMUND'S PATENT HINGES.

IRON RISING BUTTS. Per pair.

	Plain. s. d.	With Tips. s. d.	Concealed Joints. s. d.
3-inch ...	1 1	1 3	—
3½-inch ...	1 7	1 9	4 0
3¾-inch ...	1 11	2 2	5 0
4-inch ...	2 5	2 9	6 6
4½-inch ...	3 2	—	7 6
4½-in. strong	3 8	—	—
5-inch ...	4 8	—	8 0
5-in. strong	5 3	—	—

BRASS BUTTS, with moulded burnished knuckles and concealed joints.

	s. d.	With Plated flaps. s. d.
3½-inch	12 6	15 0
3¾-inch	13 0	16 0
4¼-inch	16 0	18 6
4½-inch	19 0	21 6
5¼-inch	21 6	24 0
4½-inch strong ...	20 0	22 6
5-inch ditto ...	25 6	28 6
5½-inch	24 6	27 6
6½-inch	30 0	33 0

SPRING HINGES. Per pair.

	Light. s. d.	Strong. s. d.	Extra Strong. s. d.
1½-inch door ...	4 0	6 6	—
2-inch ditto ...	4 6	7 0	9 0
2½-inch ditto ...	—	—	10 0
1½-inch brass ...	9 6	11 6	—
2-inch ditto ...	10 6	12 6	20 6
2½-inch ditto ...	—	—	22 6
Extra flaps ...	2 0	3 0	3 0

SPRING HINGES, to open either way. Per pair.

	Brass. s. d.	Iron. s. d.
For 1½-inch doors ...	42 6	17 6
,, 2-inch ,, ...	47 6	21 0
,, 2¼-inch ,, ...	53 0	25 0
,, 2½-inch ,, ...	60 0	28 0

SINGLE SWING, one hinge with pivot

For 1½-inch doors ...	28 0	11 6
,, 2-inch ,, ...	30 6	13 6
,, 2½-inch ,, ...	33 0	15 6

REDMUND'S GATE HINGES. Per pair.

ft.	in.		£	s.	d.
1	6	strong	0	8	3
2	0	,, ...	0	11	0
2	3	,, ...	0	12	3
2	6	,, ...	0	14	0
2	9	,, ...	0	15	3
3	0	,, ...	0	16	9
3	6	,, ...	1	0	0
4	0	,, ...	1	5	0
4	6	,, ...	1	10	3
5	0	,, ...	1	15	3
5	6	,, ...	1	18	9
6	0	,, ...	2	2	3
6	6	,, ...	2	5	0
7	0	,, ...	2	7	9

Bolts 4d. each extra.

COLLINGE'S SPHERICAL HINGES.

	Brass. Plain. s. d.	Brass. Ornamental. s. d.	Cast Iron. s. d.
2-inch	5 6	—	1 4
2½-inch	7 0	—	1 8
3-inch	8 6	10 3	2 0
3½-inch	10 0	11 6	2 4
4-inch	12 0	13 6	2 8
4½-inch	14 0	15 6	3 0
5-inch	15 6	18 6	3 4
5½-inch	19 0	21 0	3 8
6-inch	22 0	22 0	4 0
Plates. per pair	—	2 0	—

Collinge's gate hinges the same price as Redmund's.

HART'S CENTRES FOR SWING DOORS.

	s. d.		s. d.
1-inch ...	18 0	2-inch ...	32 0
1¼-inch ...	24 0	2¼-inch ...	34 0
1½-inch ...	28 0	2½-inch ...	36 0
1¾-inch ...	30 0	2¾-inch ...	38 0

DOOR FURNITURE, WITH PITT'S PATENT MOUNTINGS AND SELF-ADJUSTING SPINDLES.

	Mortise.*		Large knobs.		Shutter knobs.		Long plates.		Short lates.		Levers.		Pull-outs.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Plain white	4	3	1	8	0	5	1	2	0	11	3	6	4	0
Ditto buff	4	3	1	8	0	5	1	2	0	11	3	6	4	0
Gold scroll	7	6	2	9	1	0	2	9	2	6	4	3	5	0
Flowers and gold line	8	6	3	0	1	3	3	0	2	8	5	9	6	6
Gold lace	12	6	4	6	1	9	4	9	4	3	7	6	8	6
Flowers in panel, ivory margin	16	0	5	9	2	5	7	3	6	6	9	0	10	6
Plain black	5	0	1	10	0	7	1	4	1	2	4	0	4	6
Embossed gilt, registered design ...	17	6	6	0	3	0	7	6	6	6	12	6	11	6
Embossed gilt. best group, registered design	21	0	7	3	3	6	10	6	9	6	14	0	13	0
Grecian scroll, blush ground	16	0	5	9	2	5	7	3	6	6	9	0	10	6
Best groups and bands	12	6	4	6	1	9	5	9	5	3	7	6	8	6
Gold line and riband, green ground	9	6	3	4	1	5	3	9	3	6	5	9	6	9
Etruscan	15	0	5	6	2	1	6	9	6	3	8	6	9	6
Gilt strap-work	14	6	5	2	2	1	5	0	4	9	7	6	8	6
Glass, cut flap top	16	0	5	6	2	6	6	9	6	3	11	0	17	0
Amber ditto	20	0	6	6	3	0	9	6	8	6	14	0	21	0
White opal, octagon	18	0	6	8	2	9	11	0	9	6	12	6	11	6
Ebony	4	3	1	8	0	3	2	0	1	8	4	6	4	6
Walnut	6	6	2	6	0	8	3	0	2	6	7	6	6	6
Ivory	24	0	8	6	3	3	15	0	18	0	18	0	18	0
Buffalo horn	9	6	3	9	0	6	4	9	4	3	7	6	8	6

* Mortise set includes two knobs, bolt knob, and two escutcheons.

LOCKS.

Of the best quality. Each.

	s.	d.
8-inch fine ward common stock ...	1	6
9-inch ditto ditto	1	9
10-inch ditto ditto	2	0
12-inch ditto ditto	3	0
8-inch fancy bushed stock	3	0
10-inch ditto	4	0
7-inch wheel ward stock lock, best fitted	7	0
8-inch ditto ditto ...	8	0
9-inch ditto ditto ...	9	0
10-inch stock and plate wine lock, copper wards and pipe key	12	0
4-inch dead lock	1	6
5-inch ditto	1	9
6-inch ditto	2	6
8-inch ditto	5	0
10-inch ditto	7	6
Ditto best fitted	15	0
3-inch cupboard lock	0	9
3½-inch ditto	1	0
4-inch ditto, fine	1	4
Fancy ditto	1	6
3½-inch tumbler brass cut ditto ...	3	0
5-inch iron rim, 2 bolt knob locks, best	2	6
6-inch ditto ditto	3	0
7-inch ditto ditto	4	0
8-inch ditto ditto	5	0
7-inch iron rim wheel ward, 3 bolt brass knob lock	5	0
8-inch ditto ditto	6	6
9-inch ditto ditto	8	0
8-inch best drawback brass-mounted lock	8	0
9-inch best drawback brass-mounted lock	9	0
10-inch ditto ditto	10	0
6-inch mortise or brass case	7	0
7-inch ditto ditto	8	0
6-inch best town made	10	0
7-inch ditto	11	0
If half rebated, add	1	0
If full ditto add	4	0

RESTALL'S PATENT LOCKS.

Two keys each.

	inch.	s.	d.
Till or drawer	3	7	0
Chest and sloping desk ...	2½	7	6
Ditto ditto	3	7	6
Pedestal and cupboard	3½	8	0
Ditto ditto	4	8	6
Night latches, flush	4	15	0
Ditto, rimmed	4	16	0
Rim dead	6	15	0
Ditto 2 bolt	6	20	0
Mortise, 2 bolt	6	20	0

CHUBB'S PATENT DETECTOR LOCKS.

With six tumblers.

	inch.	s.	d.
Till or drawer, to	3	10	0
Cut and straight cupboard, to	4	10	0
Chest, desk, and linkplate cupboard	3	11	6
Ditto ditto ...	3½	12	6
Ditto ditto ...	4	13	6

	Inch.	s.	d.
Chest, desk, and linkplate cupboard	4½	14	6
Iron rim, dead one side ...	6	21	0
Ditto ditto	7	23	0
Ditto ditto	8	27	0
Ditto ditto	9	31	0
Ditto ditto	10	40	0
Ditto ditto	12	52	0
Mortise, dead	3	22	0
Ditto	4	23	0
Ditto	5	24	0
Ditto	6	27	0
Ditto	7	32	0
Mortise, 3 bolts	6	42	0
Ditto	7	45	0
Flush spring latch ... 2½ to	4	20	0
ditto	5	21	0
Mortise ditto	6	22	0
Spring locks for front doors, and 3 bolt rim	4	35	0
Ditto ditto ...	5	37	0
Ditto ditto ...	6	40	0
Ditto ditto ...	7	42	0
Ditto ditto ...	8	45	0
Ditto ditto ...	9	50	0
Ditto ditto ...	10	56	0
Patent combination latches ...	4	13	0
Ditto ditto ...	5	14	0
Ditto ditto ...	6	15	0

DOOR FURNITURE.

	s.	d.
4-inch bow latch brass knobs ...	2	0
4-inch sham Bramah's latches, iron rim, best	4	6
Ditto, brass rim	6	6
Mortise latches	6	0
Rebated ditto	6	6
Brass case pulpit latch	3	6
Ditto with bolt	4	6
Thumb latches ... ... 6d. to	0	9
Norfolk ditto	1	2
2-inch brass knobs	2	6
2¼-inch ditto	3	0
2½-inch ditto	3	9
Octagon ditto, add	1	0
4—brass handles	1	4
5—ditto	1	8
6—ditto	2	0
Fancy ditto	6	0
Bronze	6	0
Iron japanned door-springs, brass mounted, per inch	0	2
Brass door hooks	1	6
Iron chain and barrel	2	0

SASH AND SHUTTER IRONMONGERY.

	s.	d.
Bars with bow-latches, at per inch in length	0	1½
Wrought iron locking bars, 4 feet long, including plates and screws, each	6	0
If above or under 4 feet, add or deduct ... ... per foot	0	6

	s.	d.
Plain brass knobs and roses, ea. 3d. to	0	6
Ornamental ditto ... ... 1s. to	1	6
Brass flush rings ... ... 6d. to	1	0
Small brass rollers	0	6
Large ditto ... ... 9d. to	1	0
Brass case latches and knobs	2	6
Iron thumb-screws	0	4
Brass ditto	0	6
Iron flush lifts	0	8
Stubs and plates	0	8
Shutter turns	0	6
Common sash fastening, and screws 8d. to	1	0
Spring roller ditto ... 1s. 6d. to	2	0
Cranked ditto for casements	3	0
Espaniolette bolts ... per foot	4	6
Sash centres ... ... each, 6d. to	1	0
Shutter squares or shoes and screws, each	0	6
Best flax sash line ... per yard	0	1½
Patent line ... ... 2d. to	0	3
Gribbon's fixings ... per set	3	0
Gribbon's fixings, brass	10	0
Fixing	3	0
Sash weights, lead ... per lb.	0	4
Sash weights, iron ... ... ,,	0	1½
Smith's patent weather-tight casement fastenings	45	0
Ditto sill bars	24	0

PATENT WIRE SASH LINE. Per yard.

	Iron.		Copper.	
	s.	d.	s.	d.
⅜-inch	0	2½	0	4½
½-inch	0	3½	0	6
⅝-inch	0	4½	0	8½
¾-inch	0	5¾	1	0
1-inch	0	7	1	6

IRON BRACKETS, filed, including screws.

	s.	d.		s.	d.
2½-inch ...	0	4	7-inch ...	1	0
3-inch ...	0	5	8-inch ...	1	3
4-inch ...	0	6	9-inch ...	1	6
5-inch ...	0	8	10-inch ...	1	8
6-inch ...	0	10			

SUNDRIES.

	s.	d.
Mahogany knobs, 1-inch, per doz.	0	10
Ditto, 1¼-inch ... ... ,,	1	2
Ditto, 1½-inch ... ... ,,	1	6
Ditto, 1¾-inch ... ... ,,	2	0
Ditto, 2-inch ... ... ,,	2	3
Ditto, 2¼-inch ... ... ,,	2	6
Brass closet knobs and turn buckles	0	6
Brass buttons	0	3
Cabin hooks	1	0
Japanned hat pins	0	4
Brass ditto	0	8
Tinned meat-hooks	0	4
Small brass drawer-handles ...	0	6
Middle size ditto	0	9
Large size ditto	1	0
Dutch rings	0	2

DR. ARNOTT'S VENTILATING CHIMNEY VALVES.

	1st size 11 by 8 in.		2nd 16 by 9	
	s.	d.	s.	d.
Plain iron	5	6	8	6
Ditto bronzed and leathered	6	6	9	6
Japanned, white, and gold	9	6	14	0
Ditto with trellis work ...	15	0	22	0
Brass front	15	6	22	0
Ditto with trellis work ...	21	0	30	0
Vertical valves, plain ...	6	6	—	
Ditto bronzed and leathered	7	6	—	

SECT. 8.—THE PLUMBER AND GLAZIER.

SUB-SECT. A.—THE PLUMBER.

146. The work of the plumber consists in laying lead flats and gutters, and in putting the lead on hips, or wherever it may be wanted on the roof. He also fixes the spouting, whether of iron, zinc, or lead; and, in fact, arranges for the service of the water, both inside and outside. There is considerable art required in some of his work, as, for instance, in the service of baths and water-closets; but, generally speaking, the art of soldering *well* comprises nearly the whole of the duties of the journeyman, the master requiring in addition sufficient knowledge of hydraulics, for the proper construction and fixing of pumps, syphons, &c. This, however, is not always very easily learnt, as there are many situations in which the work must be done, and yet where it is very awkwardly placed. In no department of building is there more roguery than in plumbing; for, in the first place, it is chiefly out of sight; and, in the second, bad work does not betray itself for some years, in the ordinary way. A few pounds are, therefore, well bestowed upon an honest tradesman, if he can be found; and the estimate of such a man should not be lightly rejected in favour of another, though a somewhat cheaper, competitor, who is ready to do the work at a lower rate.

147. The tools of the plumber are few. The chief being—1st, a heavy iron *hammer*, with a short handle; 2nd, wooden *mallets*, of different sizes; 3rd, the *dressing and flatting tool*, made of beech-wood, 18 inches long and 2½ inches square, smooth and square on one side and rounded on the other; of this one end is tapered, turned up, and rounded, to form a handle for the workman; 4th, *jack and trying planes*, for planing the edges of the sheet-lead; 5th, a *chalk-line*; 6th, *chisels*, *gouges*, and *cutting knives*; 7th, *files* and *rasps*; 8th, *soldering and heating irons*, *ladles*, and *pots* for melting the solder; 9th, *rules*, with a steel leg; 10th, *scales and weights*; and, 11th, *powdered resin* in a pot.

148. SOLDERING is managed by scraping the lead to a clean new surface, free from oxide, and then, after sprinkling a little powdered resin on, the melted solder is applied, which readily unites to the bright surface of the lead. This may be done on the large scale by using the solder in a ladle, or, in lesser quantities, by means of the soldering-iron.

149. SHEET-LEAD IS LAID as follows:—In the first place, a level surface should be prepared, not more than six feet wide and 20 feet long. If, therefore, the whole is more than this, *rolls* of wood should be introduced in the width, and *a drip* in the length. The reason for this is, that if lead is laid down in larger sheets than this, and confined at the edges or sides, the expansion and contraction by heat and cold will cause it to crack and break. But in flats of this size it is found, that the confinement is not such as to cause this amount of mischief. The roll is a piece of wood, about two inches square, fixed to the floor, and having its upper edges rounded off; over this the lead is laid double, each sheet passing completely over it; the lap being thus sufficient to exclude the water. No fastening to the lead is required, as its nature is such as to adapt itself by the aid of the dressing tool to any surface. When the roll is not adopted the lead is joined by *seam*, in which the two edges are turned up, and then over one another (as is done in a brown paper parcel); after which they are dressed down close to the flat. Soldering the joints should never be attempted. There should always be a slight fall in lead flats, from a quarter of an inch to one-eighth per foot being sufficient. The *drip* is formed by making a slight step in the floor, and dressing the lead double over it, taking care to lay the lower flat of lead first. Round the edges of flats, and sometimes even in gutters, pieces of milled lead are generally fixed, running up the wall to the extent of seven or eight inches, and called *flashings*. The upper edge is passed into a joint of the brickwork or stone, and the lower one laps over the lead flat. If there is no joint, as in the case of cement, it is fastened up with wall-hooks. The weight per foot of lead for the flats is from seven to nine pounds, and of flashings about four pounds per foot.

150. LEAD PIPES are fixed in houses either for carrying off water or "soil," or for introducing the former fluid to the use of the house. For these purposes pipes of various diameters are soldered together, and they often have cocks attached, as well as pumps.

superior manner, or they will give way to the immense pressure which is applied, and will leak in a very disagreeable manner. Mr. Jennings has invented a variety of high-pressure cocks, with india-rubber tube linings, which answer the object for which they were designed, and should be used in all cases of this kind of water supply. By this method of laying on water there is also a great waste with the ordinary mode of acting on the cocks immediately by the closet handle; and to meet this difficulty Mr. Jennings has invented a "Water-waste Preventor," which is, in fact, only a small cistern, holding just enough for one action of the closet, and giving no more than this until the handle has been released. The arrangement is very simple, consisting in a cistern on the same principle as that shown in *fig.* 42, but so small as to hold only one gallon, or a gallon and a half; and this quantity is discharged in the usual way, by the lifting of the valve, which has an arm projecting from it upwards, and so placed as to keep the ball-cock from descending, and thereby letting in more water, until the valve is allowed to return to its proper seat —that is, after the closet handle has been released. The price, complete, is 35s. Self-acting closets are also used in many situations, such as railways, prisons, &c.; but they are scarcely adapted for private houses, and their mode of action need not be described. The valve is opened either by the action of the door or by the pressure of the seat; this liberates a certain quantity of water, which is held ready for descent when the weight is taken off. They are, however, more liable to get out of order than the ordinary action, consequently are objected to, except for the above purposes.

153. Baths are fixed in most good houses of the present day, and are either supplied with hot and cold water from an apparatus of their own, or else from a boiler and cistern used for other purposes. The bath itself is either of tin, galvanized iron, copper, or marble,—or sometimes of slate, or of composition, or of earthenware, which are now rapidly coming into use. The price of these varies greatly, from the galvanized iron—costing about 30s.—to the marble bath, which may be calculated at 1s. 6d. per foot super. (veined marble being almost always used), in addition to the cost of laying in cement. The composition bath is a very clean and useful material, and superior to marble, it being free from all danger of breakage. Its cost is about £4 or £5, according to the distance from the seat of manufacture. The best and cheapest mode of supplying these baths, when often wanted to be used with hot water, is to attach a wrought-iron boiler to the back of the kitchen fire; this communicates with a copper cistern placed above the level of the bath by means of two pipes, one of which opens into the top and the other into the bottom of both the boiler and the cistern. From the constant interchange of particles which takes place in water submitted to the action of heat, it follows that there is a continual stream of hot water ascending through one pipe, and cold descending through the other; and in this way the water in the cistern, if favourably placed, may be made to boil at a distance of thirty feet from the kitchen fire; and, of course, this is sufficient to supply any bath with its hot water. But there is one objection, in point of economy, where coals are dear. This continual supply of hot water at a distance necessarily takes off a great quantity of caloric from the fire, which must therefore be kept larger by means of more coals than if wanted for no other purpose than cooking. Consequently, when a bath is only occasionally required, and yet the hot water is always kept ready, it is a very expensive mode of supplying this luxury of life; and it is cheaper in such a case to have a small copper and flue expressly for heating the water. Here, again, however, there is often great difficulty in finding room up-stairs for the purpose; and, on the whole, I believe the boiler at the back of the kitchen fire is in most houses the best method of furnishing the bath with warm water. Besides which, the constant supply of hot water has now become almost a necessary in all well-regulated families, whose wants in this respect therefore demand a daily and liberal allowance, and not a scanty and occasional one. The copper cistern should have a steam pipe opening into the outer air, to prevent it throwing its steam into the house, and thus causing an accumulation of damp, and it should be supplied with water from a larger cistern by means of a ball-cock. The cold water for the bath is laid on from the ordinary cistern by a pipe, in which is a cock easily reached from the bath, as also should be the case with the hot-water pipe; and the waste water should be carried off by a waste-pipe fixed beneath the bath, all however connected with it by one common opening. It is obvious, that unless the cock in the waste-pipe is closed the bath will not fill, however the water may be laid on; but as soon as it is turned the hot and cold water have no means of escape, but must enter and fill the bath. There are several other modes of heating water for baths, as, for instance, by means of a copper cistern, in the shape of a saddle, fixed over the fire of an ordinary room,

that basin communicates at the bottom with a soil-pipe, which carries its contents downwards towards the drain by the force of gravity, aided by the descent of a flush of water from a cistern or pipe above. Thus far, all is simple, and admits of no variety, excepting as to the mode of laying on the water, and as to the way in which it shall be instantaneously released. But, in order to prevent the gaseous contents of the soil-pipe ascending, and thus proving offensive to the nasal organs, as well as injurious to the health, a valve must be constructed in some form or other at the highest part of the tube or soil-pipe, and it is here that closets vary so much. There are, however, three leading variations, which may be enumerated as the pan-closet, the syphon-closet, and the india-rubber valve; of which last, again, there are several forms. In the first of these, the basin (*fig.* 42 *a*) is set in an iron container (*d*), which is large enough to receive a pan of metal (*b*). When not pulled by the handle, this pan is kept in a level position by a balance weight outside attached to the lever (*c*); but on pulling the handle it is depressed into the position shown in the figure. This change allows the contents to escape into (*e*) a trap, called the D trap, similar in its principle to the ordinary syphon. At the same moment that the pan (*b*) is depressed, a wire attached to the same handle opens the water-cock, and a gush of water takes place into the pan, washing it out, and also the basin (*a*) and the container (*d*), with the D trap (*e*) and the soil-pipe (*f*). Thus nothing can be more effective, and the only objection is the expense; for, as the iron container and the copper basin, as well as the D trap, are all rather costly, and as their place is supplied in the syphon-closet by a single pipe costing only 3s. 6d. to 5s., they add from £2 to £3 to the prime cost. The syphon-closet (*fig.* 44) is merely a pan of earthenware, connected above with a water-pipe, as in *fig.* 42, which is opened and closed in the same way, or may be if desired. Below, however, the soil is directly carried into a glazed earthenware syphon (*see fig.* 44, *a b*); consequently, this closet is only guarded by the syphon valve, in which, however, the water standing always at the level (*a b*), does not permit the gas to descend and then ascend from the soil-pipe round the bend (*c*). This is effectual, no doubt, in all ordinary cases; and as a valve for gaseous matter it is just half as effective as the pan closet, which has *two* water valves; but it requires a great flush of water at high pressure to carry the soil well out of the syphon bend, without which it is always giving out disagreeable odours. It is sufficiently clean and wholesome for any closet having an access from the external air, but for those opening on to lobbies, it is scarcely adapted, for the reason stated above. In almost all cases where I have known it used there was an accumulation in the bend, and some odour as a consequence of it; whilst in the pan-closet the same collection takes place, but this is cut off from the rooms and passages by means of the basin valve, which is filled with *clean* water after the trap is emptied of its contents, as well as the basin itself. Every one who has tried the two will, I am confident, prefer the double security. With regard to the india-rubber valves, those made and sold by Jennings, of Charlotte-street, Blackfriar's-road, and Botten, of Clerkenwell, are the best I have seen. Jennings' india-rubber closet consists of an ordinary basin connected with the soil-pipe by means of a piece of elastic tube, which is securely wired to both. This elastic portion, when not compressed, allows the contents to pass downwards, but ordinarily its sides are pressed together by two brass arms, capable of being pulled asunder by the handle, which, as in the usual way, works the water-cock. Botten's closet is much more complicated. It consists of a pan communicating below with an india-rubber valve, which is inflated with air from the regulator. The regulator is, in fact, a pair of bellows. I have never seen this closet taken to pieces; but I have seen it in action, and it appeared to me to do its duty effectively. Nevertheless, I have a fear of all vegetable substances when submitted to the action of water, and I cannot place that confidence in the lasting qualities of india-rubber which it ought to be able to sustain if it is to be long submitted to its action. It will, therefore, be seen that I adhere to the pan as the best; next to which I should place the ordinary syphon-closet in glazed ware, though I should have no confidence in this unless there is a good head of water, and plenty of it. Over and above the difference in the cost of the closet itself, the expense will mainly depend upon the size of the cistern and the length of the soil and supply-pipes. Where daily pumping can be conveniently reckoned upon, a small cistern will answer every purpose, or supposing that water is daily laid on, as in large towns. But, in many cases, this is not practicable, and therefore a cistern must be supplied adequate to the wants of the house, and this should always be considered in the estimate. In those towns where water is constantly laid on at high pressure, cisterns are not required; but the cocks must be constructed in a very

[illegible] & 141.

and communicating with a cistern by two pipes; and this is not nearly so extravagant a method of heating the water as the one already described, but it is not so quickly heated, nor is it so effectual. Gas is also now very commonly used as a means of heating water for baths, and, I believe, very conveniently and economically. It is asserted by Mr. Defries, of 145, Regent-street, that he can raise 45 gallons of water in a bath from 50 to 95 degrees of Fahrenheit in six minutes, with a consumption of less than 30 feet of gas, costing about 2d.; and, if this is true, it is superior to all other methods. The ordinary gas-bath takes 25 minutes to heat, and the consumption of gas is about the same.

154. GAS FITTINGS are generally adapted by a tradesman especially devoted to that kind of work; but as, in principle, they exactly resemble other branches of plumbing, they are included here in the scale of prices. In the list given below, the prices of a number of plumber's articles are quoted, calculated as they are sold, unfixed. The charge of fixing, therefore, must in all cases be added; and this item in plumber's work is necessarily a heavy one, inasmuch as there is always a good deal of nice fitting required. All that here can be done is to give the price per day of journeymen at 6s. 6d. and labourers at 4s., in London, which, as usual, is above that of the country.

LIST OF PRICES OF ARTICLES USED BY THE PLUMBER AND GAS-FITTER.

		s.	d.
Milled or cast lead in sheet,	per cwt.	30	0
Ditto cut to dimensions ...	,,	31	0
Ditto and laying in gutters or flats		34	6
Ditto ditto in hips or ridges	,,	34	0
Ditto in step or other flashings	,,	36	0
Ditto and laying gutters, hips and flashings, all included with solder, wall-hooks, nails, &c. ...	per cwt.	35	0
Window lead	,,	39	0
Allow for old lead in exchange, 4 lb. per cwt. to be deducted for waste		5	0
Block-tin	per lb.	1	6
Solder, ⅓ tin and ⅔ lead ...	,,	1	0
Lead-headed nails	each	0	1
Large ditto	,,	0	2
Wall-hooks and holdfasts ...	,,	0	1½
Clout nails	per hund.	0	3
Coals	per cwt.	1	8

DRAWN LEAD PIPE. Without fixing.

Per foot.

	Common.		Middling.		Strong.	
	s.	d.	s.	d.	s.	d.
½-inch ...	0	4½	0	5½	0	6½
¾-inch ...	0	7	0	8½	0	10½
1-inch ...	0	10	1	1½	1	4
1¼-inch ...	1	0½	1	3	1	7
1½-inch ...	1	4½	1	9	2	0
1¾-inch ...	1	8	2	1	2	4
2-inch ...	2	0	2	4½	2	9
2½-inch ...	2	6	3	0	3	8

JOINTS,

Including labour, fixing the pipe, solder, and fire.

		s.	d.
½-inch (to water-pipes) ...	each	2	6
¾-inch ,, ...	,,	2	9
1-inch ,, ...	,,	3	0
1¼-inch ,, ...	,,	3	3
1½-inch ,, ...	,,	3	9
2-inch ,, ...	,,	4	3
2½-inch ,, ...	,,	4	9

JOINTS (*continued*).

		s.	d.
3-inch (to socket-pipes) ...	,,	4	0
3½-inch ,, ...	,,	4	3
4-inch ,, ...	,,	4	6
4½-inch ,, ...	,,	4	9
5-inch ,, ...	,,	5	6

BRASS GRATES.

				With rings.	
		s.	d.	s.	d.
1½-inch	each	0	5	—	
2-inch	,,	0	6	1	3
2½-inch	,,	0	7	1	6
3-inch	,,	0	8	2	0
3½-inch	,,	0	10	2	2
4-inch	,,	1	1	2	9
4½-inch	,,	1	3	3	6
5-inch	,,	1	6	4	9

AIR TRAPS,

Lead and iron, with brass grates and bells.

		Lead.		Iron.	
		s.	d.	s.	d.
2½-inch	each	1	6	—	
3-inch	,,	2	0	1	6
3½-inch	,,	2	5	2	0
4-inch	,,	3	3	2	6
4½-inch	,,	5	6	3	0
5-inch	,,	6	0	4	0
6-inch	,,	8	0	5	0

COPPER WATER BALL AND ROD.

	s.	d.
4½-inch for ½-inch cock	2	0
5½-inch ,, ⅝-inch ditto	2	3
6½-inch ,, ¾-inch ditto	3	0
7-inch ,, 1-inch ditto	4	0
Slark's cock and ball for supply cistern, ½-inch	3	6
Patent bar cock and boss	3	9
Stop-cock with nut and swivel for ditto	3	9

SOCKET, RAIN-WATER, AND FUNNEL PIPES.

Weight per foot sup.	Lead. 6 lb.	 7 lb.	 8 lb.	Composition Metal.	Galvanized Wrought Iron.
	s. d.	s. d.	s. d.	s. d.	s. d.
2-inch, per foot run	1 6	1 9	2 0	0 7	0 6
2½-inch ditto	1 7	1 10	2 2	0 9	0 7
3-inch ditto	1 10	2 2	2 6	0 11	0 8
3½-inch ditto	2 0	2 5	2 9	1 3	0 9
4-inch ditto	2 3	2 9	3 0	1 6	0 10
4½-inch ditto	2 6	3 0	3 3	1 9	1 0
5-inch ditto	3 0	3 6	3 9	2 2	1 1
5½-inch ditto	3 6	4 0	4 2	—	1 3
6-inch ditto	4 0	4 6	5 0	—	1 6

Square heads to rain-water pipe, 16s. to 20s. Circular ditto, 20s. to 30s.

Iron rain-water pipes and gutters, see pages 18 and 19.

BRASS WORK.

	½-in.	¾-in.	1-in.	1¼-in.	1½-in.	2-in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Washers and wastes or plugs	1 3	1 6	2 6	3 6	4 0	6 6
Ditto with nut and union	1 3	1 6	2 6	3 6	4 0	—
Valves, long spindles	—	—	—	3 6	4 6	6 6
Ditto, short spindles	—	1 6	2 2	3 0	4 3	6 6
Driving ferrules	0 10	1 3	2 3	3 0	4 0	12 9
Union joints for lead pipes	1 6	2 3	3 9	4 6	6 0	9 0
Boiler screws	1 3	1 8	2 6	3 9	5 0	—
Ditto with two fly nuts	1 6	2 4	3 3	4 3	6 0	—
For slate or stone cisterns:—						
Screws, with nuts and unions	3 3	4 6	6 0	—	—	—
Washer and wastes ditto	3 6	5 3	7 [illegible]	—	—	—
Spindle valves ditto	—	5 6	7 0	—	—	—
Cocks ditto	4 6	5 6	10 6	—	—	—

BALL, BIBB, AND STOP COCKS.

	⅜-in.	½-in.	⅝-in.	¾-in.	1-in.	1¼-in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Common square way	2 0	2 3	2 9	3 6	6 6	9 6
Screw ferrule ditto	2 6	2 9	4 0	4 6	8 0	11 0
Ditto round way	3 6	4 3	5 3	6 9	11 6	18 0
Ditto with screw bottom	4 0	4 9	5 9	7 6	12 6	20 6
Range boiler cocks	3 9	4 6	5 0	6 0	8 6	—
Lambert's patent	2 9	3 9	4 6	5 6	9 0	16 6
Ditto, with T-key	3 9	4 6	5 0	6 6	11 0	20 0
Ditto self-acting bibb and stop	5 0	5 6	6 6	7 9	10 0	12 6
Screw bosses or bottoms, add	0 6	0 6	0 8	0 9	1 6	2 0
Grime's patent	2 9	3 6	4 3	5 6	7 9	—
Ditto round head	2 3	2 10	3 4	4 0	7 0	—
Jennings' india-rubber tube	—	3 3	—	4 9	8 0	15 0
Large cocks, per lb.	—	—	—	—	—	2 0

	1½-in.	2-in.	2½-in.	3-in.
Common square way cocks	11 6	30 0	—	—
Ditto round way	23 0	50 0	—	—
Sluice cocks	40 0	52 6	60 0	63 0
Lambert's patent stop, in iron	15 6	22 0	—	—
Ditto station valve	27 6	30 0	40 0	50 0
Lambert's 1½-inch bath valve cocks, in iron	17 6	—	—	—
Ditto waste	26 6	—	—	—
Gun-metal nut and swivel for hose	5 6	7 9	9 0	11 0

Large gun-metal sluice cocks, 4 to 12-inch, per inch diameter, 21s.

PUMPS.

	2½-inch. £ s. d.	3-inch. £ s. d.	3½-inch. £ s. d.	4-inch. £ s. d.
Common house pump complete … …	1 10 0	2 0 0	2 10 0	3 0 0
Patent brass barrel lift pump on plank …	5 10 0	6 10 0	7 10 0	—
Force lead pump … … … … …	2 15 0	3 15 0	4 10 0	5 10 0

	£	s.	d.
Pumps for deep wells, exclusive of ironwork … … 2½-inch …	3	10	0
Ditto ditto 3-inch …	4	15	0
Ditto ditto 3½-inch …	5	10	0
Ditto ditto 4-inch …	6	15	0
Bucket and sucker, leathered— 2½-inch …	0	6	6
Ditto ditto 3-inch …	0	9	0
Ditto ditto 3½-inch …	0	10	6
Ditto ditto 4-inch …	0	12	6
Pump rods for hydraulic pumps in 10 feet lengths, with joints and brass couplings … per foot	0	1	0
Cast-iron frame, with a 5-feet fly-wheel, brass bearings, and couplings, for single or double barrels, at great depths … …	20	0	0
Carriages and levers on a plank … … £3 15 0 to	4	4	0

WATER-CLOSET APPARATUS.

	£	s.	d.
Pan closet with queen's ware basin, cistern valve, ball lever, cranks, &c., complete, except ⌂ trap, and water box … … … …	1	18	0
Ditto best manufacture … …	2	6	0
Ditto with spoon or shoe valve, extra, and spring board … …	0	12	0
Bramah's valve closet with single stool, cistern valve, spring board, brass rod, cranks, &c., complete	5	0	0
Ditto of the very best manufacture, ivory sunk handle, &c. … …	5	10	0
Blue printed basin, extra … …	0	5	0
Dent's india-rubber valve water closet … … … … …	3	3	0
Ditto urinal basins, from … …	0	17	0
Lambert's closet, with enamelled iron basin and trap complete …	1	2	0
Ditto with sunk plate … … …	1	3	6
Ditto with sunk plate and opal handle … … … … …	1	7	6
Ditto ditto self-acting … …	1	12	0
Ditto self-acting, with air vessel …	2	12	0
Marsden's patent water-closet, with rotary trap … … … …	3	3	0
Tylor's elastic valve closet … …	2	12	0
Jennings' india-rubber tube closet	4	8	0
Ditto second quality … … …	3	12	0
Jennings' earthenware closet traps	0	15	0
Ditto white ware inside … …	1	1	0
Ridgway's pottery-ware closet basin with syphon trap … … …	0	13	6
Ditto cabinet closet … … …	3	13	6
Ditto urinals … … … …	0	10	0
12-inch queen's ware wash-hand basin, with plug and chain …	0	6	0
Blue and white ditto … … …	0	8	0
Botten's closets … … … …	4	10	0
Copper tinned basins … … …	0	4	0
Ditto, fans and screws … …	0	1	3
Ball levers, with brass bearings …	0	2	0
Ditto, extra length … per inch	0	0	2
Round cistern valves … … …	0	5	6
Spoon or shoe valve … … …	0	10	0
Spring valve … … … …	0	10	6
Spring board and spring … …	0	7	0
Rod and sling for ditto … …	0	2	6
Cranks, with brass bearing … …	0	1	0
Three-quarter-inch stool cocks …	0	4	6
Handles and plates for ditto …	0	4	0
Half-inch plated urn cock … …	0	7	0
Copper wire … … per lb.	0	1	9
White closet basin … … …	0	8	6
Blue ditto … … … …	0	13	0
Enamelled iron ditto … … …	0	13	0
Ditto with fan, add … … …	0	2	0
Ditto with lead arm … … …	0	6	0
Strong lead D or P trap … …	0	15	0
Ditto service box … … …	0	7	6
Iron syphon or S trap … …	0	6	0
New tinning old basins … …	0	2	0
Fans to old basins … … …	0	2	6

WET METERS.

	£	s.	d.
3-light gas meters … … …	2	2	0
5-light ditto … … …	2	10	0
10-light ditto … … …	3	5	0
20-light ditto … … …	4	7	0
30-light ditto … … …	5	17	0

DEFRIE'S DRY GAS METERS.

	£	s.	d.
3-light gas meters … … …	2	2	0
5-light ditto … … …	2	8	0
10-light ditto … … …	3	3	0
20-light ditto … … …	4	5	0
30-light ditto … … …	5	17	0

GAS STOVES. (Defrie's make.)

	£	s.	d.
Cast-iron (roasting, baking, boiling, and steaming) full size …	23	0	0
Ditto ditto smallest …	16	0	0
Ditto ditto third size …	8	0	0
Ditto with open fire also	9	0	0
Wrought iron, small … … …	2	10	0
Hall stoves … … £2 10 to	3	10	0

GAS BATH. (Defrie's.)

	£	s.	d.
Copper bath to heat in six minutes … … … £25 to	30	0	0

COOKING AND HALL STOVES HEATED BY GAS.

Pp. 66, 114, 152, 153.

	£	s.	d.
Tinned galvanized bath, copper boiler	15	0	0
Ditto ditto to heat in 45 minutes ...	9	0	0
Ditto ditto with iron boiler ...	7	0	0

PRICE OF BATHS, by Tylor and Son, Warwick-lane.

	£	s.	d.
5-feet copper bath, enamelled white marble inside, copper pipes ...	9	10	0
Three one-inch round-way bath cocks, with socket keys and handsome levers, engraved "hot," "cold," and "waste"	3	3	0
Round copper chimney boiler, to hold 20 gallons	5	0	0
Stove and band to support boiler	4	10	0
Wood casing, with mahogany top for bath	4	10	0
Lead pipes, cocks, and fixing ...	9	18	6
	37	1	6
If cold water cistern required, with ball cock, add	4	16	6
	£31	18	0

If tinned iron bath, deduct £5 15s.

BATH heated from back of kitchen chimney.

	£	s.	d.
Copper bath, as above	9	10	0
Three way cocks, as before... ...	3	3	0
Wrought iron boiler	5	10	0
1-inch turned and brazed copper coil-pipe, say 60 feet	6	10	0
30-gallon tinned iron cistern, with small feed cistern and ball cock	3	6	0
Wood casing, as before	4	10	0
Lead pipes, &c.	13	5	6
	45	14	6
If cold cistern extra, add	4	16	6
	£50	11	0

CHEAP BATH.

Copper double case circulating boiler, on iron frame, with ash door complete, tinned iron bath, japanned white, and connected with boiler by inch circulating pipes, and pipe to cold cistern complete £9 15 0

WATER, STEAM, AND GAS FITTINGS. Exclusive of Fixing.

	2 inch.		1½ inch.		1¼ inch.		1 inch.		¾ inch.		½ inch.		⅜ inch.		¼ inch.		⅛ inch.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Stout tin pipe, per foot	2	6	1	10	1	3	0	10½	0	8	0	6	0	5	0	4	—	
Patent wrought-iron welded tubing, short pieces under 2 feet	3	0	2	0	1	9	1	3	1	0	0	9	0	7	0	6	0	5
Ditto in 4 to 12 feet lengths .	1	3	1	1	0	10	0	7	0	5	0	4½	0	3¾	0	3½	0	3
Ditto galvanized	2	0	1	3	1	1	0	9	0	7	0	6	0	5½	0	5¼	0	5
Bends and springs, wrt., each	3	9	2	3	1	9	1	0	0	10	0	8	0	7	0	6½	0	6½
Bends and elbows, cast ,,	3	6	2	0	1	9	1	0	0	9	0	8	0	6	0	5	0	4
Tees equal, and diminishing outlets . . . . . . each	3	9	2	6	2	0	1	6	1	1	0	9	0	7	0	6½	0	6½
Crosses, equal outlets ,,	4	9	3	3	3	0	2	3	1	9	1	6	1	3	1	0	1	0
Connecting piece or long screws . . . . . . each	3	6	2	3	2	0	1	6	1	2	0	11	0	9	0	8	0	7
Diminishing sockets or nipples, caps or plugs, and hexagon nuts . . . each	1	3	0	9	0	8	0	6	0	5	0	4½	0	4½	0	4	0	4
Plain sockets . . . . . . ,,	1	0	0	8	0	7	0	5	0	4	0	3	0	3	0	2½	0	2½
Iron cocks screwed to fit ,,	18	0	11	0	8	6	5	0	3	9	3	0	2	6	2	6	2	6
Ditto with brass plugs . ,,	28	0	16	6	13	6	7	6	5	6	4	6	3	9	3	9	3	9
Flanches . . . . ,,	2	0	1	9	1	6	1	4	1	2	1	0	0	10	0	10	0	10
Union joints for metal pipe ,,	—		—		—		—		1	3	0	9	0	7	0	6	—	
Strong ditto for iron . . ,,	10	0	5	6	4	6	3	0	2	0	1	6	1	3	—		—	
Syphon boxes, 1 quart . ,,	16	0	15	0	14	0	13	0	12	0	—		—		—		—	
Ditto 2 quarts . . . . ,,	20	0	19	0	18	0	17	0	16	0	—		—		—		—	
Metal pipe . . . . per lb.	1	4	—		—		—		—		—		—		—		—	
Copper ditto . . . . . . ,,	1	8	—		—		—		—		—		—		—		—	
Brass ditto . . . . . . ,,	1	6	—		—		—		—		—		—		—		—	

SUB-SECT. B.—THE GLAZIER.

153. THE WORK of this artificer consists solely in inserting glass in various frames ready prepared for him. Sometimes, however, he also fixes additional supports by means of lead strips; but this method of glazing is now almost entirely exploded, except for the purpose of imitating old work. Glazing may be divided into *sash-work* and *lead-work*, which latter may be either plain or ornamental, called *fret-work*.

156. The Tools used by the glazier are different, according as he is to glaze sashes or frames for *lead-work*. For sashes he requires—1st, a *diamond* to cut the glass; 2nd, *ranging laths* and *squares* for guiding the diamond in cutting, the *glazing-knife* for pressing in the putty, and a *hammer, with brads*, for retaining the glass in its place. For repairs, a *hacking-tool* is required to cut the hard putty out of the rebate; and when the rebate of new sashes is too shallow, a chisel must be employed to reduce its thickness. For *lead-work*, a *mill* and *vice* are required to convert the bar of lead into the form in which it retains the glass, having a double deep groove in it. Besides these, the glazier requires for this kind of work a *setting-board*, upon which the lines are set out; and a *latterkin*, which is a piece of hard wood pointed so as to open the groove; also, a *setting-knife* for cutting the lead and squeezing the glass into it, &c. Resin in a box and soldering-irons are also used in this work, the same as in ordinary plumbing. For sash-work *putty* fixes the glass, which is made of whiting and boiled linseed oil, or sometimes of flour, whiting, and raw linseed oil, called *soft putty*. A *very hard putty* is made of red or white lead and boiled linseed oil. Soft putty is a long time drying, but is much firmer and adheres better to the glass than any other, if allowed plenty of time.

157. Simple Sash-glazing is a very expeditious affair, and the journeyman may glaze a great number of feet per day with the large sizes of panes which are now so commonly used. Plate-glass, also, is as readily inserted, because it is, or ought to be, perfectly plane or true to one surface, whereas the crown glass is always more or less bent out of a true plane, and requires great care in *pinning-in* not to crack it. A thin layer of putty is first inserted in the rebate all round, and then the glass is pressed gradually in, and the brads are hammered in their places, after which the rebate is filled up with putty and cleaned off with the glazing-knife, as well as the superfluous amount left at the back of the glass, which has been pressed out of the rebate. The wages of glaziers are about the same as those of plumbers.

158. The measurement of glazier's work is made in superficial feet, and the dimensions are taken in feet, tenths, &c. For this purpose their rules are divided into decimal parts and their dimensions squared according to decimals. Circular or oval windows are measured as if they were square, because in cutting circular panes of glass there is great waste, and more time is expended than if they were of a rectangular form.

Sub-sect. C.—Wire-working.

159. Wire-working is generally done by the plumber, except in London, where it is a distinct business of itself. The prices are as follows, exclusive of fixing:—

Prices of Wire-work.

	s.	d.
Iron fly wire-work for safes, per ft. sup.	1	10
Copper ditto	4	0
Iron wire for skylights and windows...	1	0
Strong ditto, ½-inch mesh	1	3
Brass trellis wire-work for book-cases	3	0
Octagon ditto	3	0
Strong brass trellis square wire-work to fill into frames for window guards	5	0
Fine wove wire for blinds	1	6
Ditto in mahogany frames, French polished and painted	2	6
Do. with lines and ornamental corners	3	0
Ditto with lace pattern borders ...	4	0
Ditto with landscapes ... ... 6s. to	7	0
Extra for copper wire	1	0

Sect. 9.—The Bell-hanger.

160. Like the plumber's work, this department is one which is capable of much deception, inasmuch as a great part of it is out of sight. In building a house, however, one thing is of great importance; namely, to settle the plan of bell-hanging as soon as the roof is put on, and before the plastering is commenced. In the present style of hanging bells, tubes are required sunk in the plaster; and they should be fixed up before that part of the work is done, or else the plaster must be cut out to admit them, at a great loss of time and an injury to the soundness of the work. Bells are worked by cranks, of various kinds, and wires, which must either all be carried up into the roof or down into the cellar, through tubes of copper or zinc sunk in the plaster. As the bells are invariably placed in the basement-floor, it will generally be most convenient to carry all the wires down into that floor, where they are all collected into one central box, and then led up to the bells, wherever they may be arranged. The principle is so simple that it can scarcely fail of being readily understood. Each bell is suspended on a spiral spring, which allows it to ring cheerfully when shaken. This spring is held in a certain position by two other springs counteracting one another, and it is pulled by the wire acted on by the lever in the room, which lever again is held in its usual place by another spring. Thus, every part is maintained in a certain condition of rest by one or more springs, and when pulled out of this state returns to it by the action of these springs separately, and also

in some measure assisted by one another. Cranks are required of various forms for carrying the wires round angles, whether internal or external, and by their aid the wire is continuous, whatever the number of the angles from the lever or pull to the bell itself. With these remarks, it is only necessary to give the prices of the various articles required, which vary somewhat, according as to whether zinc or copper tubes are employed. Copper is, no doubt, the most lasting; but zinc will, I believe, last as long as the plaster itself.

PRICES OF BELL-HANGING,

With materials of the best quality, including copper tubes.

		s.	d.
Bell-hanger	per day	7	6
Assistant	„	4	0
Bell hung complete, in old fashion, with copper wire, cranks, &c. ...		14	0
Ditto, with the wires concealed in copper tubes and under floors ...		20	0
Ditto, with 14-oz. bell, steel and brass T-plate back spring carriage		25	0
Brass surbase bell levers		5	0
Ditto, with box		8	6
Strong brass side-pull		2	0
Brass knob pull, with plate		2	0
Copper tubing	per foot	0	7½
Zinc ditto	„	0	3½
Bell levers (see Ironmongery, page 58, where they form parts of sets).			

When bells are hung by contract, and there are more than six, they ought to cost about 20s. per bell, on the average of houses, exclusive of ornamental levers, &c., using zinc sunk tubes.

SECT. 10.—THE PLASTERER.

161. The office of the plasterer is to run cement cornices, and do plain cement, stucco, or rough cast, outside; and in the inside to run plaster cornices, or cement plinths, plaster walls, and lath and plaster ceilings and soffits of staircases, &c., &c. This work is variously performed, and priced accordingly. The plasterer may either engage to do the labour only, or he may find materials, and scaffolding also. The wages in London are usually for plain work, 6s. per day; and for ornamental work, as cornices, &c., 10s.; labourer, 3s. 6d. to 4s. per day. In the country, two-thirds of these prices are paid on the average.

162. THE TOOLS of the plasterer are—1st, a *shovel*. 2nd, a *rake*, having three prongs at a right angle with the handle, for stirring the hair into the mortar. 3rd, *stopping and picking out tools*. 4th, *straight-edges*. 5th, *trowels, laying and smoothing tools*. This last is a steel tool 10 or 11 inches long and three inches wide, ground to a semicircular shape at one end and square at the other. To the back of it, near the square end, a wooden handle is fixed. It is constantly in use for all common work. Of the trowels, there are various sizes and forms for the different kinds of cornices, &c. 6th, a small square board, with a straight handle standing down from its centre, called a *hawk*, and used for holding the plaster while at work. 7th, *models* and *moulds* for cornices.

SUB-SECT. A.—PLAIN PLASTERING AND CEMENTING.

163. THE VARIOUS KINDS OF THIS WORK are called—1st, *lathing*; 2nd, *laying*; 3rd, *lathing, laying, and set*; 4th, *lathing, floating, and set*, including pricking up—all used for what is commonly called lath and plaster, as ceilings and divisions. Besides these, we have for solid walls—1st, *rendering and set*; 2nd, *rendering, floating, and set*; 3rd, *trowelled stucco*. For these several purposes mortar in some shape, composed of lime, sand, and hair, is required.

164. Much has been written on the subject of the proper proportion of lime and sand for brick-work as well as plastering, and I have already alluded to this subject at some length. Here, however, as in the case of mortar for brick-work, the best proportion of one to the other will depend so much upon the respective qualities of each, that it is impossible to do more than indicate the best *average* proportion. It is now generally admitted that plasterers more frequently err in giving too much, rather than too little, lime. The proportion which is, I believe, the best, is about four parts of sand to one of lime for coarse stuff; and for trowelled stucco, sometimes called *skimming stuff*, nearly equal quantities may be used of fine stuff and very fine washed sand. This, however, will be found treated of at length under the head of Mortar and Plaster, at pages 13 and 14.

165. FOR PLASTERING CEILINGS AND PARTITIONS, *lathing* is the first operation to be commenced; and it consists in nailing laths on the woodwork of either. If the laths are of oak they will require wrought-iron nails, but for deal laths cast-iron nails will suffice. The latter laths and nails are most in use, and the laths are in three-feet and four-feet lengths, the former lengths being chiefly in use, because most joists and partition studs are set 18 inches from centre to centre. When four-feet laths are introduced, they are either nailed diagonally, or else the joists are placed only 12 inches apart. In lathing ceilings, the plasterer should break the joints of the laths by nailing them alternately, as follows—that is to say, supposing three-feet laths to be used, and the ceiling joists to be 18 inches

from centre to centre, a lath will be nailed to the joists 1, 2, and 3, then half a lath to 1 and 2, and then another lath to 1, 2, and 3, and so on—supposing that the plasterer has commenced from the edge of the wall. In the next row of laths he would nail one to 2, 4, and 5, then another to 2, 3, and 4, and then again to 3, 4, and 5, by which means, all through the ceiling, there would be no abrupt break in the level of the plaster. This is very important in preventing cracks, which will generally be found to occur exactly in the parts occupied by the joints where the laths are not crossed. The next business is to cover the laths with plaster, which is done in the most simple manner by what is called *laying*, in which the ceiling is finished in one coat, the plasterer using the laying tool and smoothing the work off as well as he can, but only leaving a surface fit for very homely cottages. *Lathing, laying, and set*, sometimes called *lath and plaster one coat and set*, is performed by spreading a coat of coarse stuff—but with less sand than is used for walls—over the laths, having a tolerably smooth surface, which is allowed to dry, and is then finished off by a coat of fine stuff called *putty* or *set*. This is spread with a trowel, which is used with the right hand while the left carries a wide brush, kept constantly full of water, in order to pass it rapidly and lightly over the mortar, and thus increase the facility of obtaining a good surface. In this kind of ceiling a smooth face is easily obtained, but not a perfectly true one, it being liable to retain the inequalities occasioned by the different thicknesses of the laths, &c., in spite of all the skill of the workman. *Lathing, floating, and set*, also called *lath and plaster one coat, floated and set*, is the ordinary kind of work in houses pretending to a good appearance. Here the surface is made true in the following way:—In the first place, the laths are covered with plaster, as in laying; after which, with an ordinary lath, lines are drawn diagonally across the whole ceiling from right to left, and from left to right, so as to leave a rough surface by which the next coat is enabled to adhere closely to the first. This is called *pricking up*. After about a week or ten days, according to the season of the year, another coat of coarse stuff is added, but it is put on in such a way as to fill up all the hollows in the surface and to leave a perfect level. To effect this the plasterer takes a straight-edge, which is made of various lengths, and called a *float*, from ten to twelve feet long, and by its means he forms, at certain intervals, small ridges of plaster, at such levels as he finds will enable him to bring all the whole surface to the same face. These are termed *screeds*, and are formed at such intervals that the straight-edge will reach from one to the other and have a couple of feet projecting. When the screeds are set, which will not occupy many minutes, the space between two of them is filled up to their level with the coarse stuff, and immediately afterwards the straight-edge is drawn over the surface, applied closely to the screeds, and with a slight waving motion, by which all the stuff beyond the level of the screeds is scraped off. The next thing is *to fill up* what hollows are left with more coarse stuff, and this is repeated till the whole of that portion is brought to a true surface, level with the screeds, when the plasterer goes on to another—called *floating*. The final coat, or *set*, to this species of work is done in much the same way as for laying and set; but it is generally more carefully finished, and either Bristol-lime-putty, or common putty, with the addition of about one-sixth of plaster of Paris, is employed. The pricking up can scarcely be too dry for the floating; but the latter must be finished, or set, exactly at the time when it becomes hard enough to bear the pressure of the trowel, yet still moist enough to allow the putty to adhere. A neglect of this precaution is sure to be followed by the putty blistering and scaling off. In addition to the above-mentioned cause, cracks in the ceiling are the result of a want of due proportion between the joists and the lath. If either is too strong or too weak for the other, a crack is sure to appear. All should be equally substantial or all equally light, or they will not yield together.

168. THE PLASTERING OF WALLS is done in three modes, one of which is only used in very coarse work, and is called *rendering and set, or two-coat work*. This is of a piece with the laying and set of ceilings, and is performed much in the same way as already described for that work. No screeds are made, and the whole work is finished by rule of thumb, that is, as nearly true as the eye and hand of the workman can make it. *Rendering, floated, and set*, or *three-coat work*, is the kind of plastering adopted for walls which are intended to be papered; and in it the walls are first roughed-in with coarse stuff, which is suffered to get quite dry. They are then floated and set exactly as described for ceilings, the screeds being formed and the hollows filled up precisely as in them. This is sometimes called *bastard stucco*. *Trowelled stucco* is composed of the same two coats as for bastard stucco, but the last coat being intended for paint, is required to be finished off much more smoothly. In effecting this the plasterer uses a shorter float, called the *hand-float*, made of a piece of half-inch deal, nine inches

long and three inches wide, planed smooth, with its lower edge a little rounded off, and having a handle on the upper surface. The ground to be stuccoed being made as smooth as possible, and quite dry, the stucco is spread upon it to the extent of rather more than a square yard, and, moistening it with a brush as he goes on, the workman smooths the surface with the hand-float, repeating the use of the wet brush at short intervals, until the whole is perfectly smooth.

167. PUGGING, is coarse plaster mixed with coarse material, as chopped hay, or rubbish of any kind, which is laid between the floor and the ceiling to interrupt the sound; it is spread about one inch and a half thick upon rough boards.

168. ROUGH-CASTING is an exterior finishing much cheaper than stucco, and therefore more frequently employed on cottages, farm-houses, &c., than on buildings of a higher class. The wall or lathing intended to be rough-cast is first pricked up with a coat of lime and hair; and when this is dry a second coat is laid on of the same materials as smoothly as possible. As fast as the workman finishes this surface he is followed by another with a pailful of rough-cast, with which he bespatters the new plaster, and thus the whole dries together. The rough-cast is composed of fine gravel washed from all earthy particles, and mixed with pure lime and water till the whole is of a semi-fluid consistency. It is thrown from the pail to the wall with a wooden float about five or six inches square, made of half-inch deal, and fitted with a wooden handle. The workman who applies the rough-cast also carries in his other hand a brush, with which he modifies the surface, if it is rough or lumpy. It is very durable.

169. COMMON STUCCO, for external walls, consists of clean-washed sharp sand and ground stone-lime, mixed dry, in the proportion of three of the latter to one of the former; this is the regular proportion, but very often an extra quantity of sand is added to it. When well incorporated they are ready for use, and may be preserved in casks till wanted. The wall should be prepared by raking the joints and indenting the stones or bricks. The stucco is then *rubbed in*, quite in a liquid condition, with a flat brush of hog's bristles; and as soon as this coat is tolerably dry screeds should be formed, as in internal work, of the stucco applied as fast as it can be mixed, and followed up by *filling in* with fresh stucco, used as quickly as possible after mixing, till the whole surface is completed. With this material small cornices may also be run, but for those of large girth cement must be used by itself, or added in equal proportions to the stucco.

170. CEMENT, as a plain covering for walls, is chiefly used in external work, in which it is applied in the same way as stucco (see last par.) The cement commonly used for this purpose is the Roman cement, as made in the neighbourhood of London, or at Stourbridge when to be used in the midland and northern districts. It is mixed with two parts of sand, or even sometimes with two-and-a-half or three parts, when the cement is of very good quality, and is then applied as already described for stucco. It sets very rapidly, and the workman can only mix a small quantity at a time. Great care should be taken to avoid using it when there is any probability of frost, as the surface is totally destroyed by a freezing temperature supervening before the water is evaporated. The varieties of cement used for this purpose are chiefly those which I have enumerated; the London makers being principally Messrs. Parker and Anderson. Hamelin's mastic is also used for cementing, but it can only be laid on in a very thin coat, and requires some other cement underneath. Parker's is generally allowed to stand the wet the best.

171. PARIAN CEMENT is employed for internal decorations and for walls which are required to dry very quickly. It is used like plaster of Paris, and its price is its only drawback.

172. GAUGED COARSE STUFF is also used for the same purpose, but it does not fulfil it so well. It is composed of one or two parts of plaster of Paris to five of coarse stuff, and it is employed for plastering either laths or walls, as desired. It sets hard very rapidly; but it by no means follows that because it is hard the moisture is all removed; on the contrary, it is found that walls plastered in this way do not bear the paper, without destroying the colour, any sooner than ordinary plaster.

SUB-SECT. B.—ORNAMENTAL PLASTERING AND CEMENTING.

173. The most common kind of ornamental plastering is that in which a moulding is *run* in plaster or cement, either for a cornice or an architrave, or for a plinth. This may be *plain* or *enriched*—the latter term meaning the introduction of some ornament which is incapable of being run, and which must be cast in a mould. Enriched cornices are first run plain, and then the enrichments are added in separate pieces; the cornices are described as having one, two, or three enrichments, according to the *number of lines of* cast ornament of which they are composed, in addition to the running member.

174. THE RUNNING OF CORNICES in internal

work is managed as follows:—In the first place, the section is drawn on paper by the architect, and from this a model is made, which should correspond in its outline with the section, though, if this is so drawn as to leave any sinkings too narrow to work, the plasterer should make the necessary alteration on the face of his mould. This is made of beech-wood as a ground, in which also all the principal and large divisions are carefully cut; but the small projections intended to cut the quirks, or other sinkings, are made in zinc, and nailed on the face of the mould. The plasterer next examines the projection of the cornice, and if he finds it is more than seven or eight inches, he is obliged to call in the aid of the carpenter, who strengthens and lightens the work by introducing wooden brackets, ten or twelve inches apart, upon which the plasterer afterwards nails laths longitudinally, and then covers them with plaster. He will, of course, take care to keep the size of this preparatory work within that of the mould; and he will also see that the ceiling and wall are floated and ready to receive their final coat. With these preliminaries settled, two workmen provide themselves with a tub of putty and a quantity of plaster of Paris, and proceed to run the cornice. To effect this properly, a straight-edge, made of a slight deal strip, is nailed to the wall, and another to the ceiling, at such distances as to receive exactly corresponding square grooves in the beech-mould, which should run freely upon them, their only use being to guide the mould. The putty is now mixed with about one-third of its bulk of plaster of Paris, and reduced to a semi-fluid state with clear water. One of the workmen takes some of this on his *hawk*, and applies it to the ceiling in such a mode as to occupy the space left between the straight-edges, and thick enough to form the cornice. The other workman follows with the mould, which is steadily pushed along by him and guided by the straight-edges. This of course strikes off a great part of the plaster and putty, but leaves also a series of grooves and projections corresponding with the outline of the mould. As the work proceeds, the one workman fills up all the hollows which require more material, while the other keeps going over the ground with the mould, beginning always at the corner where he first entered it, and gradually completing the work. In this way one side of a room is furnished with its cornice nearly up to the corner, but not quite; and with two clever hands the operation is, so far, soon accomplished. They then proceed to the other sides in succession, having from the first provided a scaffold which will enable them to do so. When all the sides are completed, the workmen proceed to extend the cornice to the mitres, by means of their hand-tools, of various kinds; and as the mould will enable them very nearly to unite the lines, it is not a very difficult business to effect with the hand. The same kind of proceeding is adopted in running all kinds of continuous work in plaster or cement, whether those in rooms or in external cornices or architraves, or the rusticated lines of cement, or the plinths which are sometimes run round the basements of houses. In all cases, a mould is first made, and then it is used upon the principle stated above.

175. **Enrichments** are made and added as follows:—In the first place the cornice is run in the same way as in a plain cornice (see last paragraph), but with this difference, that the member or groove which is to receive the enrichment must be cut low or deep enough for that purpose, for which, on the average, one-half to three-quarters of an inch will be sufficient. A clay model is then made of the intended form, and from this a wax mould is taken by laying it in melted bees-wax. After this the mould is removed, and, when dry, oiled and filled with liquid plaster. This soon sets, and is taken out, trimmed, and set by, ready for use. Enrichments which consist of continuous foliage, or other similar characters, are cast in lengths of about one foot, taking care that the pattern shall extend the whole length of the division, or sometimes twice the length; two moulds being required to complete it. These lengths being cast in sufficient numbers, are next fixed in their places by liquid plaster of Paris, and the joints made good with the same material. Circular central ornaments, which are usually applied to the ceiling, are cast in the same way, and fixed up by the same means, aided also in some cases by nails or screws. Cement cornices are also sometimes enriched, and the ornamental part is cast and stuck on in the same way. It is now the custom to introduce enrichments of *papier maché*, and especially for heavy work like central ornaments. These are sold ready moulded, at a certain price per flower, and are then screwed up to the woodwork by ordinary screws, by which mode they are free from the danger of falling on the heads of those below—a dangerous accident, which has sometimes happened to parties standing beneath flowers when dancing has been going on above.

176. **Scagliola** is the last kind of ornamental plastering which requires our notice. It is a very beautiful imitation of the various marbles, the process for making

which is as follows:—A wooden cradle, composed of thin strips of wood, is made of the form of the intended column or pilaster, of a diameter less by about two inches and a half, in order to allow room for the material. This cradle is next lathed and pricked-up, as for common work, and when this is quite dry the scagliola is applied, the result being that an imitation of marble is afforded at a much lower price, and of such a quality that neither the eye nor the simple touch will detect the deception, and, in fact, nothing but the superior resonance will do so, marble being dull to the ear when struck, while this sounds hollow. In preparing the scagliola the workman selects the purest gypsum, in fragments, and as soon as the largest ones lose their brilliancy in the process of calcination he withdraws the fire and passes the powder through a very fine sieve, it being in fact a very fine and recently-prepared plaster of Paris. He then mixes this with a solution of glue or isinglass, instead of plain water, and colours several portions separately of the respective shades composing the marble, applying them and mixing them as he proceeds to cover the surface. In this, great art is required, though perhaps not so much as to a novice might appear necessary. Most of these trades are tolerably easy to practise when the little tricks familiar to the workman are discovered. As soon as the desired surface is obtained in the rough condition left by the mould, the workman polishes it with a piece of pumice-stone, used with a wet sponge alternately; after which he goes on to use tripoly and charcoal with a piece of fine linen, next tripoly and oil with a piece of felt, and finally pure oil alone.

177. The prices of all plain plastering and cement work are estimated by the superficial yard, and of running work by the foot superficial or the foot running, according to the size. Mouldings, when measured by the foot super., are girthed in and out of all quirks, &c., and the enrichments are charged separately, either at a sum per piece or per foot run. The same rule applies to all cement work. The following scale of prices is adopted in and near London, but it is somewhat higher than those charged in the country:—

LABOUR AND MATERIALS USED IN COMMON WORK, AND LOWEST COST.

	Nails.	Laths	Lime.	Sand.	Hair.	Plasterer.	Labor'r.	Total Cost.
Yds.	No.	loads.	yds.	yds.	lbs.	days.	days.	£ s.
100 of render and set requires ...	—	—	1½	3	4	3	3	2 5
100 of render, float, and set ...	—	—	1¾	3½	5	4½	4½	3 5
130 of lath, plaster, and set ...	10,000	1	2½	4½	7	6	6	4 15
130 of lath, floating, and set ...	10,000	1	3	5	7	7	7	5 15

Table of the London Price of Plasterer's Work. For Labour only.

Per yard.	Straight. s. d.	Circular. s. d.
Rough rendering on brick ...	0 2	0 2½
Render set	0 3	0 4½
Floated, render set	0 5	0 6½
Bastard stucco	0 6	0 7½
Trowelled stucco	0 8	0 10
Ditto to dadoes	0 10	1 0
Ditto to groins	—	1 0

Lath Work.

	Straight. s. d.	Circular. s. d.
Lathing only	0 1½	0 2
Lay and set	0 4½	0 5½
Two coats and set	0 6	0 7½
Floated, lay, and set ...	0 7	0 8½
Floated, lath, and plaster, set to groins	—	0 9
Bastard stucco	0 8	0 10
Trowelled stucco	0 9½	0 11
Ditto dadoes	1 0	1 2
Ditto to groins	—	1 2

Soffits and Friezes.

	s. d.	s. d.
Straight, plain on brick, per foot super	0 1½	0 3
Straight, plain on lath, ditto	0 2	0 3½
Raised margins to form panels, per foot run ...	0 3	0 3½
Four and five inches soffits and friezes ditto	0 4	0 5
Six and eight inches ditto	0 5	0 6½
Quirks ditto	0 0½	0 0¾
Bead and quirk	0 2	0 3
Arris edges	0 0¾	0 1½

Mouldings, &c. Per foot run.

	s. d.	s. d.
Small to panels, &c., under four inches girt	0 1½	0 2½
Plain cornices, under six inches girt	0 3½	0 4½
Ditto under 9 inches girt ...	0 5	0 6½
Ditto under 12 inches girt ...	0 6	0 8
All above, per foot super. ...	0 6	0 8
Enrichments: solid, trimmed, not exceeding 2 inches girt	0 2½	0 3

	s.	d.	s.	d.
Enrichments, from 2 to 5 inches girt	0	4	0	5
Undercut, not exceeding 2 inches	0	3	0	4
Ditto from 2 to 5 in. girt ...	0	5	0	6½
Hollow, or put up single, not exceeding 2 inches girt	0	4	0	4½
Ditto from 2 to 5 inches girt	0	6	0	7

OUTSIDE WORK.

	Stucco.		Rom. C'ment.		Mastic	
	s.	d.	s.	d.	s.	d.
Plain face jointed, per yd.	0	6	0	9	1	0
Ditto circular on plan ...	0	9	1	0	1	4
Ditto facias, pilasters, &c. per foot super	0	1½	0	2	0	2
Plain mouldings ditto ...	0	6	0	9	0	10
Circular ditto	0	10	1	0	1	3
Arris edges, per foot run	0	1	0	1	0	1
Narrow reveals, margins, &c.	0	2½	0	2½	0	3
Colouring, per yard ...	—		0	2	—	
Party ditto	—		0	3	—	

SCAGLIOLA.

	per foot super.	
	s.	d.
Gray granite, or brown porphyry ...	5	6
Red or green porphyry, or sienna ...	6	6
Verona, or rondora	7	0
Green granite	7	6
Verd antique, or lapis lazuli	8	0
Preparing columns, plastering, &c...	1	0

SECT. 11.—THE PAINTER AND COLOURER.

178. PAINTING, as applied to house-building, consists in the application of artificial colours, compounded with oil, or oil and turpentine, or water, in embellishing and preserving wood and other materials. It is founded upon the power which oil and varnishes, together with white lead, possess, of preventing the injurious action of the atmosphere upon wood, iron, stucco, and even stone, whilst, at the same time, they are capable of being made the vehicles of imparting considerable decorative effect by mixing with various colouring matters.

179. THE TOOLS required by the painter are—1st, *brushes*, of various sizes, made generally of hogs' bristles, but sometimes of more yielding materials; 2nd, *a scraping* or *pallet knife;* 3rd, *a grinding-stone* and *muller* to mix the colours; 4th, *pots* and *cans* to hold the various materials, as oil, turpentine, &c.; 5th, *pumice-stone* and *burning-irons* to remove old paint from doors, &c.

180. IN PROCEEDING TO PAINT WOOD, especially deal, the knots must first be killed, as without this process they are constantly giving out turpentine, and thus destroying the effect of the paint. The composition for this purpose is made with red and white lead, ground fine with water on a stone, and mixed with strong double glue size, in a warm state, in which condition it is also to be brushed on to the knots. A second coat of white lead ground in oil, with the addition of a fourth part of a dryer, as red lead or litharge, will generally be necessary in any case where turpentine exists to any extent. This must be suffered to get quite dry, and then should be rubbed down with pumice-stone. After this *knotting* is completed, the next process is *to prime*. The paint for this is composed chiefly of white lead, mixed with a very small quantity of red lead, in linseed oil, and laid on thin, so that a pound ought to cover eighteen or twenty yards. Another coat is generally laid on still thinner than the first, and in this condition the work is said to be *primed and one coat*, ready for painting, which will always require two coats more.

181. All the nail-holes and other irregularities must now be filled with putty, and the whole surface brought as nearly as possible to the intended condition of smoothness. After this, a coat of the intended colour is laid on, and in a day or two the finishing one. The various colours are mixed with oil and turpentine and a dryer, or with turpentine and a dryer without oil, if the last coat is wished to look dead or *flatted*, as it is called. For *graining*, a groundwork of oil colour is first made by laying on two coats of a colour much lighter than the wood which is to be imitated, and then with various tools, and by the aid of tricks, the veins, &c., in the wood are laid on either with turpentine coloured to match them, or with beer and water sometimes; and finally varnish is laid over all, so as to render these thin layers safe from friction, and also to give a highly polished surface. This is the most beautiful part of house painting. In outside work, little or no turpentine should be used, except for graining.

182. DISTEMPER COLOURING is effected by dissolving or suspending colours in a thin size. Generally, whiting also is added, making up a kind of body necessary for this work. In repainting old work, either with oil paint or distemper, as much as possible of the paint should be scraped off. Before colouring, it is always advisable to give one coat of oil paint mixed with a considerable portion of spirit of turpentine; and this is especially necessary in smoked and stained ceilings.

183. THE MEASUREMENT OF PAINTER'S WORK AND COLOURING.—This kind of work is always measured by the yard superficial, and the dimensions are taken in yards, inches, and tenths. Every part

passed over by the brush is measured, consequently, the dimensions must be taken in a line that girts over the moulding, &c. Ornamental and carved work are charged extra. The prices of the paints themselves are given in page 22.

PRICES OF LABOUR AND COMMON TOOLS, &c.

		s.	d.
Painters	per day	6	0
Putty	per lb.	0	3
Hard stopping	,,	0	6
Ground brushes	each	0	3
Distemper ditto	,,	0	5

PAINTER'S PRICES.

Measure wherever the brush goes; the allowance for edges to be in the height only, and returns in width.

To distinguish what should be taken superficially, and what running, observe that the latter must be cut in both edges.

Party colours only apply where the framing is of one colour, and the panels another.

Mouldings cut in differently from the framing or ground, to be taken distinctly as a running dimension.

Labour only is charged about one-half of the following prices:—

COMMON COLOURS—as lead, stone, white, black, or chocolate—LABOUR AND MATERIALS, including knotting and stopping.

	One coat. s. d.	Two coats. s. d.	Three coats. s. d.	Four coats. s. d.	Extra coat. s. d.	Flatting coat. s. d.
Plain work ... ... per yard superficial	0 3½	0 6	0 8	0 10	0 2	0 3
Carved work ... ... per foot super.	0 2	0 3	0 4	0 5	0 1	0 1
Skirting, plinth, and string, under 12 inches wide ... ... per foot run	0 1	0 1½	0 2	0 2½	0 0½	0 1
Chair rail ... ... ,,	0 1	0 1½	0 2	0 2½	0 0½	0 1
Hand-rail, newell, and stair margins ...	0 1	0 1½	0 2	0 2½	0 0½	0 1
Cornices under 9 inches girt, per foot run	0 1	0 1½	0 2	0 2½	0 0½	0 1
Reveals ... ... ,,	0 1	0 1½	0 2	0 2½	0 0½	0 1
Iron stay bars and chain ,,	0 1	0 1½	0 2	0 2½	0 0½	0 1
Sides and steps to ladders ,,	0 1	0 1½	0 2	0 2½	0 0½	0 1
Rail and pin ... ... ,,	0 1	0 1½	0 2	0 2½	0 0½	0 1
Bars and frames to hot-houses and sky-lights ... ... per foot run	0 0¾	0 1	0 1½	0 2	0 0½	0 0½
Cornices 9 inches girt and under 18 inches	0 1½	0 2	0 2½	0 3	0 0½	0 0¾
Arris gutters ... ... per foot run	0 1½	0 2	0 2½	0 3	0 0½	0 0¾
Water trunks ... ... ,,	0 1½	0 2	0 2½	0 3	0 0½	0 0¾
Window sills ... ... ,,	0 2	0 3	0 4	0 5	0 1	—
Coping edge ... ... ,,	0 2	0 3	0 4	0 5	0 1	—
Stone stringing ... ... ,,	0 2	0 3	0 4	0 5	0 1	—
Ditto plinths ... ... ,,	0 2	0 3	0 4	0 5	0 1	—
Frames not exceeding 24 feet 6 inches super. ... ... each	0 8	1 0	1 4	1 8	0 4	0 5
Large and Venetian ditto ... ,,	1 0	1 6	2 0	2 6	0 6	0 7
Squares not exceeding 2 feet 6 inches super. ... ... per dozen	0 8	1 0	1 4	1 8	0 4	0 5
Large ditto ... ... ,,	1 0	1 6	2 0	2 6	0 6	0 7
Lights, each casement	0 3½	0 5	0 6½	0 8	0 1½	0 2
Scrapers and bars	0 3	0 4	0 5	0 6	0 1	0 1½
Plain chimney-pieces ... ... each	1 0	1 6	2 0	2 6	0 6	0 10
Boxed ditto ... ... ,,	1 6	2 2	2 10	3 6	0 8	1 3

EXTRA COLOURS, to be added to the price of common colours.

	Per yard. s. d.	For skirting. s. d.	Frames and squares. s. d.
Drabs, French gray, salmon, fawn	0 1	0 0¼	0 2
Brunswick green or Etruscan buff	0 1½	0 0¼	0 2
Peach blossom and lilac	0 2	0 0½	0 3
Eau de mer, or light greens, and olive green ...	0 3	0 0¾	0 3
Indian red	0 4	0 1	0 4
Patent greens, yellow, and blue verditer	0 6	0 1	0 6
Chinese vermilion or lake	1 6	0 2	1 0

EXTRA COLOURS *(continued)*.	Per yard. s. d.	For skirting. s. d.	Frames and squares s. d.
Chinese vermilion or lake twice done on a scarlet ground ...	2 6	0 3½	1 6
Party colours ...	0 1½	—	—
Sanding ...	0 6	—	—
Claircolle ...	0 1½	0 0½	0 6
Splashing in imitation of granite ...	0 6	0 1	—

GRAINED IMITATIONS. Per yard super.

The prices for superior work are for imitations executed by artists of the first ability.

	Common. s. d.	Superior. s. d.	Frames and squares. s. d.
Wainscot or oak ...	0 9	1 6	1 0
Mahogany, maple, hair-wood, or sycamore ...	1 2	1 9	1 2
Satinwood ...	1 4	2 0	1 3
Rosewood, or coromandel wood ...	1 6	2 3	1 6
Bird's-eye maple, or pollard oak ...	1 8	2 6	1 8
Yew-tree, amboyna, or walnut ...	2 0	3 0	1 9

For enrichments and carved work, add on the above one-fourth.

Hand-rail, grained mahogany and varnished, 4d. per foot run.

MARBLING. Per foot super.

	s. d.
Veined on a dead white ground ...	0 3
Dove, bardilla, and black and gold ...	0 5
Sienna and brocatella ...	0 6
French, Venetian, Devonshire, or rouge royal ...	0 8
Green verd, mona, or porphyry ...	0 6
Gialla antico, rose antico, jasper, or verd antique ... 6d. to	0 9
Lapis lazuli ...	1 0

If on columns, once and a half the above prices. If fluted, twice.

VARNISHING. Per yard.

	s. d.	Squares, per doz. s. d.
Spirit varnish, for every coat	0 5	0 4
Once in best copal ...	0 6	0 5
Twice ditto ...	0 10	0 8
For every additional coat, add	0 4	0 3
If on the real wood, add ...	0 4	0 3
Wainscot or mahogany cleaned and sized, add ...	0 6	0 9
Hand polishing, add to either of the aforesaid ... per foot super		0 6
Ditto on columns ... ,,		1 0
Ditto on fluted ditto ... ,,		1 6
Imperial or French polishing ,,		0 6
Ditto to hand-rails ... per foot run		0 4

MOULDINGS CUT IN. Per foot run.

	s. d.
If any common colours, each coat ...	0 0½
Black, rosewood, or any other imitation ...	0 2
Cross-banded margins ditto ...	0 4
Broad ebon lines to form panels ...	0 1
Light and shadowed lines, ditto ...	0 1½

WRITING.

The height of the letter to be measured and charged per inch run.

	Under 4 inches. s. d.	4 to 8 inches. s. d.	8 to 12 inches. s. d.
Plain painted letters	0 0½	—	—
Egyptian, or sunk ...	0 0¾	0 1	0 1½
Gold, plain ...	0 1½	0 2	0 2½
Ditto, Egyptian or sunk ...	0 2	0 3	0 4
If shaded, add ...	0 0½	0 0½	0 0¾
If double shaded, add	0 0½	0 0¾	0 1
If blocked up ...	—	—	0 0½

GILDER.

A book of gold contains 25 leaves 3¼ inches, by 3¼ inches square, or 1 foot 7½ inches superficial, and will cover about a square foot of plain work.

	s. d.
Gilding in oil gold, including preparation, per foot super ...	3 0
Ditto in matt or burnished gold ...	4 0
Carved work, from once and a half to double the above prices, according to the depth of the enrichment.	
Gilding ½-inch mouldings, per foot run	0 2
Ditto ⅝-inch ditto ...	0 2½
Ditto ¾-inch ditto ...	0 3
Ditto 1-inch ditto ...	0 4
For every ¼-inch above, add ...	0 0¾
Gilder, per day ...	7 0
Gold leaf, per book ...	2 0
Parchment size, per lb ...	0 8
Oil gold size ...	3 0

WHITING AND COLOURING. Per yard.

	s.	d.
Lime whiting, each coat	0	0¾
Whiting, new work	0	0¾
Wash and stop, for paper-hangers	0	1
Wash, stop, and whiting	0	1½
Ditto, and any common colours, as grays, buffs, stones, &c.	0	2
Ditto, fine colours, as bright yellow, warm tints, cloud colours, and common greens	0	2½
Wash, stop, and delicate tints, as blue, verditer, pea-greens, pinks, &c. ...	0	3
Washing and stopping plain cornices, under 6 inches girt	0	0½
Ditto, from 6 to 12 inches	0	0¾
Ditto, from 12 to 18 inches	0	1
For every enrichment, well cleaned out, not exceeding 3 inches girt, add per foot	0	0½
Ditto, from 3 to 6 inches girt	0	1
Washing, stopping, and colouring cornices, under 6 inches girt	0	0¾
Ditto, from 6 to 12 inches girt	0	1
Ditto, from 12 to 18 inches girt	0	1¾
For every enrichment, well cleaned out and coloured, not exceeding 3 inches girt, ...	0	0¾
Ditto, from 3 to 6 inches girt	0	1

SECT. 12.—THE PAPER-HANGER.

184. PAPER-HANGING is a very simple process; and, in practice, it consists in preparing the walls with pumice-stone, then sizing them to make the paper adhere, and finally applying the paper in breadths, previously having covered the back with common paste. In all cases, the paper should be pasted some 10 minutes or so before it is hung, as in that period it has had time to stretch as much as it will do; and if applied without this precaution it is sure to appear cockled when dry. With crimson, and all the delicate papers, a lining-paper is first applied. No wall should be papered, when it is possible to avoid it, until it has been plastered more than a year—that is, an entire summer; the winter not aiding in drying the work to any great extent. The following prices are rather above the average, but it is better to pay a good price than to have the work spoiled.

MEMORANDA.

A piece of paper is 12 yards in length, and 21 inches wide, containing 7 square yards, or 63 feet superficial; it is customary to allow 1 piece in 7 for waste. 4½ square yards 1 French piece.

A doz. of borders is 12 yds., or 36 ft. run.

To find the number of yards running, or pieces of paper, there are in a superficial quantity—divide the number of superficial feet by 5, which will give the number of yards; and divide the yards by 12, which will give the number of pieces. Or adopt the rule given at par. 61. Any odd yards are considered and charged as one piece.

PAPER-HANGER'S AND DECORATOR'S CHARGES.

	Per piece.				
	s.	d.		s.	d.
Pumicing, sizing, and preparing walls				0	6
Lining paper				0	9
Best white ditto				1	0
Hanging ditto				0	9
Pumicing ditto				0	2
India-rubber paper for damp walls ...				2	6
Canvass linings				3	0
Hanging ditto, including tacks ...				1	6
Canvass lining, including hanging, tacks, and slipping joints with brown paper				6	0
Common bedroom paper, two blocks	1	0	to	2	0
Ditto with blues, purples, grays, and drabs	2	0		2	6
Imitation marble	1	6		3	0
Imitation marble, done by hand, in a superior manner	6	0	to	9	0
Imitation granite, frosted ...	2	0		4	0
Imitation of wainscot ...	1	0		2	0
Ditto overgrained	2	6		3	6
Satin papers	4	0		6	0
Ditto with 5 blocks	6	0		10	0
Crimson flock	12	0		16	0
Satin and gold	16	0		20	0
Very rich flock on a gold ground	24	0		36	0
Panelled decoration ...	9	0		36	0
Ditto including hanging ...	11	0		40	0
Hanging common paper, per piece	—			0	9
Ditto satin papers	—			1	0

	Per piece.	
	s. d.	s. d.
Hanging flock and gold, and marbles and granites in blocks	—	to 1 6
Common borders, per dozen yards	1 0	3 0
Gothic borders	6 0	8 0
Broad handsome borders, per yard	1 0	1 6
Handsome scroll, shaded and enriched with gold, per yard	—	4 0
Corners to ditto, each as one yard of border.		
Hanging borders, per dozen	0 6	1 0
Sizing, two coats, and varnishing marble paper, per piece	2 6	3 6
Ditto, two coats and twice varnishing	4 0	6 0

DISTEMPERING. Per yard.

	Done once.	Twice.
	s. d.	s. d.
Wash, stop, and water white	0 3	0 4
Ditto, cream tint	0 4	0 6
Ditto, drab, fawn, Etruscan buff, or gray	0 5	0 8
Ditto, tea-green, eau de mer, lilac, peach blossom	0 8	0 10
Ditto, fine light blue, or pea-green, with verditer	1 0	1 4
Ditto, clouded ceilings ...	2 0	—
If done with one coat of colour in oil, add	0 2	—
Ditto in turpentine ...	0 3	—

If charged at per piece, take seven times the above prices.

Plain cornices, per foot super, equal to half the above prices.

Enriched ditto two-thirds ditto.

LINES, MOULDINGS, &c. Per foot run.

	s. d.
Ebon lines, drawn out in panels ...	0 0½
Light and shadowed lines, ditto ...	0 1
Ditto with shaded margin, three inches wide	0 2
Acrotere to ceilings	0 2½
Small honeysuckle, or Athenian fleuron corners to ebon lines, each	1 3
Ditto to light and shadowed lines ...	2 0

STAINING PINE OR DEAL. Per yard super., including stopping.

	s. d.
Staining only	0 3
Ditto and one coat oil	0 4
Ditto and one coat varnish	0 6
Ditto and two coats varnish	0 8
Stained and flatted for waxing ...	0 6
Stained, flatted, and waxed	1 0
If sized, extra	0 1

BURNISHED GOLD AND BLACK STAINED POLISHED MOULDINGS.

Per yard run, including fixing and needle points.

	Gold.	Black and gold.	Black.
	s. d.	s. d.	s. d.
½-inch wide	0 8	0 5	0 2
⅝-inch ,,	0 9	0 6	0 2
¾-inch ,,	0 10	0 7	0 2½
1-inch ,,	1 0	0 8	0 3
1¼-inch ,,	1 3	0 10	0 4
1½-inch ,,	1 6	1 0	0 5
1¾-inch ,,	1 9	1 2	0 6
2-inch ,,	2 0	1 6	0 7

CHAP. IV.

THE LOCALITY, ASPECT, AND PLAN.

SECT. 1.—CHOICE OF LOCALITY.

185. Where a projecting builder has a choice of situation, he ought to consider very carefully all the objections and advantages which may be urged for and against each spot proposed to him. In America, it is no uncommon thing to see a house on its travels, placed on rollers, and taking leave of its birth-place; but in England, though the attempt has been made, it has not been found to succeed, because brick and stone are not materials which will easily bear such usage. In the first place, their enormous weight adds greatly to the labour of moving them; and in the second, their tendency to disruption is increased in a ratio with their weight. Therefore, the builder must be content to let his house remain where he builds it, except at an enormous sacrifice of time and money. It is true, that by taking the house to pieces he may move it, but the loss is fully one half, and therefore no one will voluntarily risk such an undertaking. In towns there is not often much choice, because few people prefer to live within their actual precincts, and if they are compelled to do so, they are generally confined to some limited area in making their selection. In them drainage is the chief consideration, united with as airy a spot as can be found; but in the country,

or in suburban situations, four things must especially be sought for, namely, good air, good drainage, a good soil, and good water. The salubrity of the air is in a great measure dependent upon the soil, the amount of foliage, and the elevation of the district, all of which should be investigated. Our ancestors were very fond of selecting for their houses low, sequestered, and richly-wooded dells, which, being warm and sheltered from the winds, were suited to their style of building, and to the habits of those days. In the first place, much more time was then spent in walking and riding on horseback than at present, coaches and carriages being rare conveniences; in the second place, windows and doors were much less closely fitted than is now the case; and in the third place, the *general* growth of timber was not then what it now is, or rather was, in many counties. In most districts, the timber was collected in large woods, and the hedgerows were not so filled with elms and ash trees as may now be seen in some of our richest counties. The consequence of this last innovation (which fashion is now exploding wherever high farming is practised) is that the air is poisoned by collections of decaying leaves in the ditches, and the health of the inhabitants is affected to a degree which certainly does not produce ague, but dyspepsia and continual headache, with prostration of the mental and bodily strength. Wherever, therefore, it is possible to meet with a high and dry situation, or a gravelly subsoil, yet with sufficient depth of mould to form a serviceable garden, the choice should be greatly biassed in its favour. Trees and dells are very ornamental no doubt, and I confess that in selecting a site I should be strongly tempted by a pretty spot, but I am quite sure that in *wooded districts* the addition of home foliage is sufficient to turn the scale, and to make that which might otherwise be bearable, a constant source of disease. On the Wiltshire, Berkshire, or Sussex downs, or on the wolds of Yorkshire, a sheltered spot is unobjectionable, and a few trees about the house are not only ornamental but useful. Here the air is almost too bracing, and there is not the slightest harm in inhaling emanations from half a hundred trees. But in counties like Somersetshire, Devonshire, Worcestershire, Herefordshire, and great part of Shropshire, together with the wooded parts of Hampshire, the air is everywhere supersaturated with moisture and with vegetable emanations, and if allowed to stagnate about a house it rapidly becomes more and more deleterious, and produces all sorts of maladies. This consideration must always be taken into account, as nothing is more common than for the man accustomed to woodlands to select a high situation when he ought to avoid it; and, on the other hand, the previous dweller on an exposed situation seeks a retired and sheltered spot in the heart of a wooded district when he ought to look for the most open one at his disposal. It is just the same with the effect of sea air. To those who have lived in richly-wooded districts it is a complete panacea for all their ills, not only because it is bracing from its saline particles, which are chiefly useful to the citizen, but because its air is free from the emanations of vegetation. But to the dweller on exposed situations, sea air is often even prejudicial, and instead of affording the relief to the ailments to which he is obnoxious, it aggravates them ten-fold; unless he can find a warm and protected spot like Ventnor, in the Isle of Wight, and some of the secluded nooks on the Devonshire coast. With regard to situation, then, I repeat that a dry soil is always to be desired; and, according to the nature of the district, either a high one or else a moderately sheltered one. Gravel is desirable as a subsoil on all but very low situations, and even there if it is well drained, but nothing can be worse than a gravel-bed, which is locked in by a surrounding basin of clay, *without any outlet for its rain-fall.* Such a spot is a sponge, constantly accumulating the elements of disease, which are prejudicial both to man and some of the domestic animals, for it is notorious that such a kind of land is peculiarly fatal to sheep. It is not therefore the mere existence of a gravel-bed which makes a spot suited to the habitation of man, but it must also be well drained both superficially and in its sub-soil in order to be fit for his residence. It is astonishing what effect a small difference in the elevation has upon the salubrity of a particular spot. I have known a rise of 16 feet, and within three hundred yards, produce an entire change from a relaxing to a bracing air. This was partly caused by the lower spot being the bottom of a basin, and completely enveloped in foliage, while the higher was comparatively free from trees, and had a tolerable fall for its surface-water and for its drainage. Whenever there is a fall of 10 feet to a running stream, the drainage in country houses may always be efficiently carried out, as far as the individual house is concerned; but this is not the only consideration, for the surrounding fields should also be well drained, or they will be constantly enveloped in fogs and become fertile sources of evil. The house-drainage, therefore, I repeat, may be easily provided for if the fall is what I have stated; but the fields cannot so readily be made healthy, unless they are also under the control of the owner of the land on which the house is to be built. The side of a hill is not always a healthy spot, unless the herbage is scanty, and it is free from woods, or unless the surface-water is interrupted by a brook or drain considerably above the level of the proposed site and carried off in a different direction. No spot, in most cases, is so suited for a house as a slight rise, or knoll, which looks down on all the surrounding land; for here there is no chance of any annoyance from watercourses belonging to other parties, or of malaria arising from stagnant water. Quickly running streams, so long as they are not subject to extensive floods, are never in any way injurious, and may be made the means of carrying off all the unhealthy accumulations of a country residence; but dammed up waters of all kinds, unless there is a good stream through them, and especially stagnant ponds, should be carefully avoided near a house, however ornamental they may be. Flooded meadows, also, are by no means desirable, and especially such as remain wet for a long time after being submerged. It may be gathered from what I have remarked, that I have a horror of water, and so I have in the wrong place. Water, like fire, is a good friend, but a fatal enemy; and it should be as carefully sought for in the one capacity as it should be eschewed in the other. I have said that gravel or sand, in certain situations, is highly desirable, that is, when well drained; and with these may be coupled, sand-stone or lime-stone subsoils, chalk and also the primary rocks. These all give good air, and some of them good water. On the other hand, reclaimed lands in which there is no soil but the peaty remains of decayed vegetation, are peculiarly unfit for the human residence. It is true that every year they become more and more sound, and their inhabitants more and more healthy; and the sturdy men of Lancashire and Lincolnshire may be pointed out as specimens of its growth. But it must be remembered, that there are two districts in those counties, one of which is high, dry, and bracing, while the other is composed of the soil I have been alluding to. In the high lands health beams in every eye, and the step is elastic and firm, if not always graceful. But among the inhabitants of the low districts, the cheek is pallid, the eye sunken and dull, and the step inelastic, while the real height is apparently reduced by a stoop, which amounts in many cases to a crouch. In some of these marshes, as in Essex, Cambridgeshire, and the fens of Lincolnshire, gin is a necessary of life, and is swallowed in incredible quantities without those ill effects which follow its use in more healthy districts. But though we have hitherto discussed the presence of water as a foe, it must now be looked for as a friend which cannot well be dispensed with, and whose place, when absent, cannot be supplied by any known substitute. In some of the most healthy districts in other respects, water is a desideratum which can scarcely be obtained on any terms in dry summers, and the want of which is often felt as a sore evil by the inhabitants. Among the down-farmers this is especially the case, and severe loss is often sustained by them in sheep and cattle for want of this fluid. But not only is this the case in outlying farms, but in some of our country towns there is not a single well, and the inhabitants are dependent for their daily supply upon water-carts, which bring it from a distance. With reference to suburban sites, a very different set of nuisances must be looked for, and the same will apply to the advantages which are sought for. Much here will depend upon the peculiar circumstances of the individual—as, for instance, his occupation or pursuit, his family or professional connexions, the facility of access, or the suitability of the neighbourhood to his position in society. The district which will suit one man will be either too aristocratic or too low for another. The frequent passing of omnibuses would be an annoyance to many individuals, while to others it would be a *sine quâ non*. The same may be said with reference to a railway station, to which the daily traveller by that mode of conveyance would gladly be near, whilst the bulk of mankind would dislike its noise and tumult. The neighbourhood of manufactories and mills will be avoided, excepting by those who are employed about them; and if any tall chimneys are to be seen near a spot which is in contemplation, it is well to ascertain exactly what they are used for, and whether any noxious or offensive trades are there carried on. Since the smoke-consuming act came into force in London, a great improvement has been made in regard to that disagreeable accompaniment of our cities and towns, and many neighbourhoods which were formerly quite unbearable from the soot with which they were surcharged, are now comparatively clear. In every case the drainage should be attended to, and it should be ascertained either that there is a sufficient culvert near—capable of carrying off the house drainage—or that facilities exist for a proper cesspool. Where the habitations are not too thick, I by no means think that cesspools are objectionable—that is, provided they can be made at a sufficient distance from the house; but, nevertheless, I should always prefer a *well-arranged* culvert. In those cases where large culverts are so built that they have little or no fall, and are never flushed except by storm water, they are far inferior to a well-built cesspool; for as they accumulate their contents in enormous quantities, and daily receive fresh additions without passing them on, their gaseous emanations are bound to return through the traps, in spite of all the care in the world in their construction. There is no filtration to any extent (or if any, it is in that way highly injurious to the basement floors of those houses which are next to the leakage), and consequently the bulk is not diminished sometimes for weeks, or even months together—that is, as long as there is no rain. In a cesspool, on the other hand, a man has the control over his own, and is not annoyed by that of his neighbour, unless the neighbourhood is very close; in which case, as I before remarked, these receptacles should be avoided. Recently made ground is always suspicious, as it is generally the seat of a reclaimed marsh, and, as such, takes many years to be made fit for human habitations. All filled-up ponds are still worse, where their vegetable matter has been buried beneath the surface. Water comes very high in the list of requisites in all suburban, as, in fact, in every other kind of residence. A good well of spring water can seldom be reckoned on; but it shoud be obtained if possible. In most of the suburban districts of London, spring water is almost unknown, and if a well were sunk for every house it would be impossible to procure it. The expense is great, in most cases, which would deter the greater number of builders, especially now when most of the companies supply a perfectly pure and wholesome water, and which is most agreeable to the palate. The improvement in this respect is marvellous within the last year or two, and the health of the inhabitants appears to be proportionally raised in the scale, judging as far as one can do from so short an experience. Supposing a plot of ground is offered in a neighbourhood only partly covered, it will be desirable to ascertain what probability there is of the remainder being turned into an annoyance, either in the shape of a manufactory, a public-house, or even in that of a place of worship, neither of which are desirable buildings to have erected in front of one's drawing-room windows. When a garden either for flowers or vegetables is desired, of course the nature of the soil will form an object of inquiry, for in some cases the clay is so stiff and poor as to be wholly unfit for either purpose. Lastly, the soil must be examined in reference to the foundations, which are sometimes a considerable source of expenditure when the building has to be commenced. Gravel, rock, and chalk are excellent for this purpose, especially if the whole site to be occupied by the house is composed of the same; but alternating beds of gravel and sand, or of gravel and clay, or clay itself, are not so good; the last, however, being the best for the purpose. The great objection to clay, in all its varieties, is that it swells and contracts so much with alternations of wet and dry weather. If the whole house is on one uniform bed which extends many yards in every direction, the only result of this change will be that it will be bodily raised or depressed to a certain extent; but this is not of the slightest consequence, as the variation of an inch or two in the distance from the earth's centre can make no difference. But if the bed of clay varies in thickness, or if it forms the sloping side of a bank, or if it does not extend far in every direction, it is liable to swell unequally, and thus to separate walls into sections, and to make doors refuse to shut or open. The best test of this fact is a pair of gate-posts set on the side of a hill, with a gate fitting them of ten or twelve feet in length. In dry weather this gate will perhaps have a lap of an inch between its latch and the gate-post, while after long-continued rain it will refuse to shut from being too wide. This I have often seen; and I know no remedy for it, except to connect the two gate-posts together by masonry or timber under-ground. It is the same in house-walls which are seen to be tumbling about in the most grotesque manner, in aggravated cases—that is to say, where the walls are built on the surface of an irregular bed, without the proper precautions to which I shall hereafter advert. In the three first soils to which I have drawn attention, no more soil need be excavated than is sufficient for the erection of the house, as for cellars or kitchens, if under-ground; but in clay, in all cases, the foundations should be carried below the reach of ordinary changes from moisture, and this will entail a considerable extra expenditure. A good foundation, therefore, renders a spot by so much the cheaper than one with a bad one, as the expense of a deep foundation exceeds that of a shallow one—that is, supposing the price of each to be the same. At all events, it renders the one worth so much the more money, the two being equally desirable in other respects.

SECT. 2.—THE ASPECT.

186. To a certain extent the choice of aspect is left to be decided after the purchase of the site, but not entirely so, because in many cases of suburban residences the

owner is bound to build his house in conformity with existing arrangements, and if not on a particular plan, yet with a settled aspect. Here, therefore, he should pause, and consider whether that aspect is a good one; but for this purpose it is right to know what is really good, and the reverse. In this particular we have two things to consider, the prevailing objectionable wind and the sun. In this climate, the wind which we most of us wish to avoid is that from the east or north, sometimes one and sometimes the other being the worst, according to the protection afforded by the nearest hills. Whichever of these, therefore, is the worst, neither the back nor the front should be turned that way, but one of the sides, in which there need be few openings. Again, it is of great importance to health, especially to that of young children, that they should have plenty of sun, and especially morning sun, and therefore a north aspect is not good or cheerful, inasmuch as little sun can be obtained on that side. Neither is a full south or south-west aspect very much to be sought after, because here we have too much of a good thing, and are scorched by his rays; but a south-eastern view of this luminary is the one which commands all the advantages, without any drawbacks, and is that which most people would choose if they could. In this aspect we have the sun upon the breakfast table, which is the time when children benefit most by his rays, and are rendered by them happy and cheerful for the rest of the day. The nursery therefore should, if possible, be turned to this point; and when the heat of summer comes, there is all the cheerfulness and health which it affords in the morning, without the sultry heat of the afternoon. In towns this is of still greater importance than in the country, and I have often proved the fact by comparing a number of young families on the two sides of a street running east and west. Those which have had the full sun upon their rooms have looked full of life and health, while those with the north aspect have appeared pale and dejected. Sun and air are more particularly needful to all *young* animals, though good for all ages; and the effect of withholding their benefits is really the same as that of placing a plant in a dark cellar, which soon becomes bleached and refuses to grow. The aspects, therefore, which I should choose would be—1st, the south-east; 2nd, the south; 3rd, the south-west; 4th, the west; and, 5th, the east—carefully avoiding any one with a northerly point in it.

SECT. 3.—CHOICE OF THE PLAN.

137. PLANS OF HOUSES vary so much with the means and desires of their projectors, that here there is great difficulty in affording any useful information. The size of the family, the number of servants, the habits with regard to parties, &c., are so many varying features which will always interfere with any preconceived mode of laying out bricks and mortar to advantage. It will, however, generally be found that the town or city house, and the house in the country, will require very different arrangements, because the habits of both masters and servants are so much unlike each other. Thus, in the country, much has often to be provided for which in towns is seldom wanted, as premises for baking, brewing, washing, and the like; the same may be observed in reference to the drawing-room, which in the country should not be placed up stairs, whilst in the town this situation is generally preferred. It must, therefore, always be remembered, that a plan which may be exceedingly well adapted for a house in the town, is quite out of character in a more open spot; and this not only applies to its internal construction in point of utility, but to its external character in an architectural point of view. In thickly peopled districts the scarcity of land renders a tall house an object of necessity, though by choice no one will encounter three or four pair of stairs every time a visit to the bedroom is to be accomplished. Consequently, in the country, a house of one or two stories is that formation which most people approve of, whilst in towns double that number will generally be required. The kitchen is also in almost all cases underground in towns, whereas in the country there is a very proper prejudice against this plan—and for this there is a very good reason connected with the drainage of this part of the house. It should be remembered, that in country districts the house is almost always isolated, and is dependent upon its own drains for its freedom from wet, and from its own *exuviæ*. The consequence is, that no ordinary drains will make the basement floor dry, and that a kitchen placed there is always more or less unfit for human habitation. But in towns there ought always to be a culvert below the level of the kitchen floor, and if so, it is comparatively easy to make it as dry as the lowest floor of a house can ever be. It will be necessary, therefore, to take into view the various kinds of houses with their sizes, reaching from the small five-roomed house, adapted to the possessor of the income which is placed at the bottom of my list, up to the more roomy dwelling calculated for the expenditure of £1000 a-year. But, in the first place, there are certain considerations

which are common to all houses, such as freedom from fire and from danger of falling, and these points having been made the subject of an act of parliament (18 & 19 Vict., c. 122), it will be well to insert its clauses in this place. They are framed with great care and judgment, and are no doubt very applicable to all cases where the interests of the public are concerned; but perhaps in some few instances they may be more stringent than is necessary, when the individual is building his own house in a spot separated from all others: as, for instance, it is provided that "No timber or woodwork shall be placed in any wall or chimney breast nearer than 12 inches to the inside of any flue or chimney opening." This is nearly three times the thickness which is ordinarily maintained, as in most districts a flue of brick 4½ inches in thickness is considered quite safe if pargeted properly. It may be erring on the right side, but if unnecessary, it leads to a greatly increased expenditure. Again, it is also provided, that "No pipe for conveying hot water shall be nearer than three inches to any combustible material." Now, this is really absurd; for there is no more danger in attaching a small hot-water pipe to wood than there is in carrying it in wooden vessels; and no one would object to a washing-tub as being injurious. It is not a little singular that gas-pipes are omitted in this prohibitory enactment, and yet they are ten times more likely to set fire to wood than a hot-water pipe; and they are, in numberless instances, carried under floors and through joists all over the house. However, taking the act as a whole, it is a very good guide; and even parties building in the country should act on good advice before they transgress its provisions, although not specially intended for them.

EXTRACTS FROM THE METROPOLITAN BUILDING ACT. 1855.

18 & 19 VICT., cap. 122.

INTERPRETATION OF TERMS.

III. In the construction of this Act (if not inconsistent with the context) the following terms shall have the respective meanings hereinafter assigned to them; that is to say,

"The Treasury" shall mean the Commissioners of her Majesty's Treasury.

"Public Building" shall mean every building used as a church, chapel, or other place of public worship; also every building used for purposes of public instruction; also every building used as a college, public hall, hospital, theatre, public concert room, public ball room, public lecture room, public exhibition room, or for any other public purposes.

"External Wall" shall apply to every outer wall or vertical enclosure of any building not being a party wall.

"Party Wall" shall apply to every wall used or built in order to be used as a separation of any building from any other building, with a view to the same being occupied by different persons.

"Cross Wall" shall apply to every wall used or built in order to be used as a separation of one part of any building from another part of the same building, such building being wholly in one occupation.

"Party Structure" shall include party walls, and also partitions, arches, floors, and other structures separating buildings, stories, or rooms, which belong to different owners, or which are approached by distinct staircases or separate entrances from without.

"The Area" of every building shall be deemed to be the superficies of a horizontal section of such building made at the point of its greatest surface, including the external walls and such portion of the party walls as belong to the building, but excluding any attached building the height of which does not exceed the height of the ground story.

"The Base of the Wall" shall mean the course immediately above the footings.

"Owner" shall apply to every person in possession or receipt either of the whole or of any part of the rents or profits of any land or tenement, or in the occupation of such land or tenement other than as a tenant from year to year, or for any less term, or as a tenant at will.

"Builder" shall apply to and include the master builder or other person employed to execute or who actually executes any work upon any building.

"District Surveyor" shall mean every such surveyor who is appointed in pursuance of this Act, or whose appointment is hereby confirmed, and shall include any deputy or assistant surveyor appointed under this Act.

In all cases in which the name of an officer having local jurisdiction in respect of his office is referred to without mention of the locality to which the jurisdiction extends, such reference is to be understood to indicate the officer having jurisdiction in that place within which is situated the building or other subject matter or any part thereof to which such reference applies.

"Person" shall include "a Body Corporate."

LIMITS OF ACT.

IV. This Act shall extend to all places within the limits of the metropolis as defined by an Act passed in the present session of Parliament, intituled, An Act for the better Local Management of the Metropolis, and to all other places to which such last-mentioned Act may be extended, unless such places are in making such extension expressly excepted from the operation of this Act; but nothing herein contained shall affect the exercise of any powers vested by any Act of Parliament in the Commissioners of Sewers of the city of London for the time being.

WALLS.

Structure and Thickness of Walls.

XII. Walls shall be constructed of such substances and of such thickness and in such manner as are mentioned in the first schedule annexed hereto.

RECESSES AND OPENINGS.

Rules as to Recesses and Openings.

XIII. The following rules shall be observed with respect to recesses and openings in walls:—

Recesses and openings may be made in external walls, provided,

1.—That the backs of such recesses are not of less thickness than eight and a half inches; and,

2.—That the area of such recesses and openings do not, taken together, exceed one-half of the whole area of the wall in which they are made.

Recesses may be made in party walls, provided that,

1.—The backs of such recesses are not of less thickness than thirteen inches; and,

2.—That every recess so formed is arched over, and that the area of such recesses do not, taken altogether, exceed one-half of the whole area of the wall of the story in which they are made; and,

3.—That such recesses do not come within one foot of the inner face of the external walls.

But no opening shall be made in any party wall, except in accordance with the rules of this Act.

The word Area, as used in this section, shall mean the area of the vertical face, or elevation, of the wall, pier, or recess to which it refers.

MISCELLANEOUS.

As to Timber in External Walls.

XIV. Loophole frames may be fixed within one inch and a half of the face of any external wall; but all other woodwork fixed in any external wall, except bressummers and story posts under the same, and frames of doors and windows of shops on the ground story of any building, shall be set back four inches at the least from the external face of such wall.

Rules as to Bressummers.

XV. The following rules shall be observed with respect to bressummers and timbers:—

1.—Every bressummer must have a bearing in the direction of its length of four inches at the least at each end, upon a sufficient pier of brick or stone, or upon a timber or iron story post fixed on a solid foundation, in addition to its bearing upon any party wall; and the ends of such bressummer shall not be placed nearer to the centre line of the party walls than four and a half inches.

2.—No bond timber or wood plate shall be built into any party wall, and the ends of any beam or joist bearing on such walls shall be at the least four and a half inches distant from the centre line of the party walls.

3.—Every bressummer bearing upon any party wall must be borne by a templet or corbel of stone or iron tailed through at least half the thickness of such wall, and of the full breadth of the bressummer.

Height and Thickness of Parapets to External Walls.

XVI. If any gutter, any part of which is formed of combustible materials, adjoins an external wall, then such wall must be carried up so as to form a parapet one foot at the least above the highest part of such gutter, and the thickness of the parapet so carried up must be at the least eight and a half inches, reckoned from the level of the under side of the gutter plate.

Height of Party Walls above Roof.

XVII. Every party wall shall be carried up above the roof flat or gutter of the highest building adjoining thereto, to such height as will give a distance of fifteen inches measured at right angles to the slope of the roof, or fifteen inches above the highest part of any flat or gutter, as the case may be; and every party wall shall be carried up above any turret, dormer, lantern light, or other erection of combustible materials fixed upon the roof or flat of any building within four feet from such party wall, and shall extend at the least twelve inches higher and wider on each side than such erection; and every party wall shall be carried up above any part of any roof opposite thereto, and within four feet from such party wall.

As to Chases in Party Walls.

XVIII. In a party wall no chase shall be made wider than fourteen inches, nor more than four and a half inches deep from the face of the wall, nor so as to leave less than eight and a half inches in thickness at the back or opposite side thereof, and no chase may be made within a distance of seven feet from any other chase on the same side of the wall.

As to Construction of Roofs.

XIX. The roofs of buildings shall be constructed as follows; that is to say,

1.—The flat, gutter, and roof of every building, and every turret, dormer, lantern light, skylight, or other erection placed on the flat or roof thereof, shall be externally covered with slates, tiles, metal, or other incombustible materials, except the doors, door frames, windows, and window frames of such dormers, turrets, lantern lights, skylights, or other erections.

2.—The plane of the surface of the roof of a warehouse or other building used either wholly or in part for purposes of trade or manufacture shall not incline from the external or party walls upwards at a greater angle than forty-seven degrees with the horizon.

Rules as to Chimneys and Flues.

XX. The following rules shall be observed as to chimneys and flues:—

1.—Chimneys built on corbels of brick, stone, or other incombustible materials may be introduced above the level of the ceiling of the ground story, if the work so corbelled out does not project from the wall more than the thickness of the wall, but all other chimneys shall be built on solid foundations, and with footings similar to the footings of the wall against which they are built.

2.—Chimneys and flues having proper doors of not less than six inches square, may be constructed at any angle, but in every other chimney or flue the angles shall be constructed of an obtuseness of not less than one hundred and thirty degrees, and shall be properly rounded.

3.—An arch of brick or stone or a bar of wrought-iron must be built over the opening of every chimney to support the breast thereof, and if the breast projects more than four and a half inches from the face of the wall, and the jamb on either side is of less width than seventeen and a half inches, the abutments must be tied in by an iron bar or bars turned up and down at the ends and built into the jambs for at least eight and a half inches on each side.

4.—The inside of every flue, and the back or outside, unless forming part of the outer face of an external wall, must be rendered, pargeted, or lined with fire-proof piping.

5.—The jambs of every chimney must at the least be eight and a half inches wide on each side of the opening thereof.

6.—The breast of every chimney, and the front, withe, partition, and back of every flue, must at the least be four inches in thickness.

7.—The back of every chimney opening, from the hearth up to the height of twelve inches above the mantel, must at the least be eight and a half inches thick if in a party wall, or four and a half inches thick if not in a party wall.

8.—The thickness of the upper side of every flue, when its course makes, with the horizon, an angle of less than forty-five degrees, must be at the least eight and a half inches.

9.—Every chimney shaft shall be carried up in brick or stone work all round, at the least four inches thick, to a height of not less than three feet above the roof, flat, or gutter adjoining thereto, measured at the highest point in the line of junction with such roof, flat, or gutter.

10.—The brickwork or stonework of any chimney shaft, excepting that of the furnace of any steam engine, brewery, distillery, or manufactory, shall not be built higher above the roof, flat, or gutter adjoining thereto, measured from the highest point in the line of junction with such roof, flat, or gutter, than a height equal to six times the least width of such chimney shaft at the level of such highest point in the line of junction, unless such chimney shaft is built with and bonded to another chimney shaft not in the same line with the first, or otherwise rendered secure.

11.—There shall be laid, level with the floor of every story, before the opening of every chimney, a slab of stone, slate, or other incombustible substance, at the least twelve inches longer than the width of such opening, and at the least eighteen inches wide in front of the breast thereof.

12.—On every floor, except the lowest floor, such slab shall be laid wholly upon stone or iron bearers, or upon brick trimmers; but on the lowest floor it may be bedded on the solid ground.

13.—The hearth or slab of every chimney shall be bedded wholly on brick, stone, or other incombustible substance, and shall be solid for a thickness of seven inches at the least beneath the upper surface of such hearth or slab.

14.—No flue shall be built against any party structure, unless a withe is properly secured thereto, at the least four inches in thickness.

15.—No chimney breast or shaft built with or in any party wall shall be cut away unless the district surveyor certifies that it can be done without injuriously affecting the stability of any building.

16.—No chimney shaft, jamb, breast, or flue shall be cut into except for the purpose of repair, or doing some one or more of the following things:—

Of letting in or removing or altering flues, pipes, or funnels for the conveyance of smoke, hot air, or steam, or of letting in, removing, or altering smoke jacks.

Of forming openings for soot doors, such openings to be fitted with a close iron door and frame.

Of making openings for the insertion of ventilating valves, subject to the following restriction, that no opening shall be made nearer than twelve inches to any timber or combustible substance.

17.—No timber or woodwork shall be placed,

In any wall or chimney breast nearer than twelve inches to the inside of any flue or chimney opening.

Under any chimney opening within eighteen inches from the upper surface of the hearth of such chimney opening.

Within two inches from the face of the brickwork or stonework about any chimney or flue, where the substance of such brickwork or stonework is less than eight and a half inches thick, unless the face of such brickwork or stonework is rendered.

And no wooden plugs shall be driven nearer than six inches to the inside of the flue or chimney opening, nor any iron holdfast or other iron fastening nearer than two inches thereto.

Rules as to close Fires and Pipes for conveying Vapour, &c.

XXI. The following rules shall be observed as to close fires, and pipes for conveying heated vapour or water; that is to say,

1.—The floor under every oven or stove used for the purpose of trade or manufacture, and the floor around the same for a space of eighteen inches, shall be formed of materials of an incombustible and non-conducting nature.

2.—No pipe for conveying smoke, heated air, steam, or hot water shall be fixed against any building on the face next to any street, alley, mews, or public way.

3.—No pipe for conveying heated air or steam shall be fixed nearer than six inches to any combustible material.

4.—No pipe for conveying hot water shall be placed nearer than three inches to any combustible material.

5.—No pipe for conveying smoke or other products of combustion shall be fixed nearer than nine inches to any combustible material.

And if any person fails in complying with the rules of this section he shall for each offence incur a penalty not exceeding twenty pounds, to be recovered before a justice of the peace.

Rules as to Accesses and Stairs in certain Buildings.

XXII. The following rules shall be observed with respect to accesses and stairs:—

In every public building, and in every other building containing more than one hundred and twenty-five thousand cubic feet, and used as a dwelling house for separate families, the floors of the lobbies, corridors, passages, and landings, and also the flights of stairs, shall be of stone or other fire-proof material, and carried by supports of a fire-proof material.

Rules as to Habitable Rooms.

XXIII. The following rules shall be observed with respect to habitable rooms in any building; that is to say,

1.—Every habitable room hereafter constructed in any building, except rooms in the roof thereof and cellars and underground rooms, shall be in every part at the least seven feet in height from the floor to the ceiling.

2.—Every habitable room hereafter constructed in the roof of every building shall be at the least seven feet in height from the floor to the ceiling throughout not less than one half the area of such room.

3.—Cellars and underground rooms shall be constructed in manner directed by the said Act for the better Local Management of the Metropolis.

And whosoever knowingly suffers any room that is not constructed in conformity with this section to be inhabited shall, in addition to any other liabilities he may be subject to under this Act, incur a penalty not exceeding twenty shillings for every day during which such room is inhabited; and any room in which any person passes the night shall be deemed to be inhabited within the meaning of this Act.

As to Party Arches over Public Ways.

XXIV. Every party arch, and every arch or floor over any public way, or any passage leading to premises in other occupation, shall be formed of brick, stone, or other incombustible materials; if an arch of brick or stone is used, it shall, in cases where its span does not exceed nine feet, be of the thickness of four and a half inches at the least, but when its span exceeds nine feet, be of the thickness of eight and a half inches at the least. If an arch or floor of iron or other incombustible material is used, it shall be constructed in such manner as may be approved by the district surveyor.

As to Arches under Public Ways.

XXV. Every arch under any public way shall be formed of brick, stone, or other incombustible materials. If an arch of brick or stone is used, it shall, in cases where its span does not exceed ten feet, be of the thickness of eight and a half inches at the least; where its span does not exceed fifteen feet, it shall be of the thickness of thirteen inches at least; and where its span exceeds fifteen feet, it shall be of such thickness as may be approved by the district surveyor. If an arch or other construction of iron or other incombustible material is used, it shall be constructed in such manner as may be approved by the district surveyor.

Rules as to Projections.

XXVI. The following rules shall be observed as to projections:—

1.—Every coping, cornice, facia, window dressing, portico, balcony, verandah, balustrade, and architectural projection or decoration whatsoever, and also the eaves or cornices to any overhanging roof, except the cornices and dressings to the window fronts of shops, and except the eaves and cornices to detached and semi-detached dwelling houses distant at least fifteen feet from any other building, and from the ground of any adjoining owner, shall, unless the Metropolitan Board otherwise permit, be of brick, tile, stone, artificial stone, slate, cement, or other fire-proof material.

2.—In streets or alleys of a less width than thirty feet, any shop front may project beyond the external wall of the building to which it belongs for five inches and no more, and any cornice of any such shop front may project thirteen inches and no more; and in any street or alley of a width greater than thirty feet, any shop front may project ten inches and no more, and the cornice may project for eighteen inches from the external walls, but no more.

3.—No part of the woodwork of any shop front shall be fixed nearer than four and a half inches from the line of junction of any adjoining premises, unless a pier or corbel of stone, brick, or other fire-proof material, four and a half inches wide at the least, is built or fixed next to such adjoining premises as high as such woodwork is fixed, and projects an inch at the least in front of the face thereof.

4.—The roof, flat, or gutter of every building, and every balcony, verandah, shop front, or other projection, must be so arranged and constructed, and so supplied with gutters and pipes, as to prevent the water therefrom from dropping upon or running over any public way.

5.—Except in so far as is permitted by this section in the case of shop fronts, and with the exception of water pipes and their appurtenances, copings, cornices, facias, window dressings, and other like architectural decorations, no projection from any building shall extend beyond the general line of fronts in any street, except with the permission of the Metropolitan Board of Works.

Rules as to the Separation of Buildings, and Limitation of their Areas.

XXVII. The following rules shall be observed as to the separation of buildings, and limitation of their areas.

1.—Every building shall be separated by external or party walls from any adjoining building.

2.—Separate sets of chambers or rooms tenanted by different persons shall, if contained in a building exceeding three thousand six hundred square feet in area, be deemed to be separate buildings, and be divided accordingly, so far as they adjoin vertically by party walls, and so far as they adjoin horizontally by party arches or fire-proof floors.

3.—If any building in one occupation is divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from without, every such tenement shall be deemed to be a separate building for the purposes of this Act.

4.—Every warehouse, or other building used either wholly or in part for the purposes of trade or manufacture, containing more than two hundred and sixteen thousand cubic feet, shall be divided by party walls in such manner that the contents of each division thereof shall not exceed the above-mentioned number of cubic feet.

Rules as to Uniting Buildings.

XXVIII. The following rules shall be observed as to uniting buildings:—

1.—No buildings shall be united unless they are wholly in the same occupation.

2.—No buildings shall be united, if when so united they will, considered as one building only, be in contravention of any of the provisions of this Act.

3.—No opening shall be made in any party wall dividing buildings, which, if taken together, would contain more than two hundred and sixteen thousand cubic feet, except under the following conditions:—

Such opening shall not exceed in width seven feet or in height eight feet.

Such opening shall have the floor, jambs, and head formed of brick, stone, or iron, and be closed by two wrought iron doors, each one-fourth of an inch thick in the panel, at a distance from each other of the full thickness of the wall, fitted to rebated frames, without woodwork of any kind.

4.—Whenever any buildings which have been united cease to be in the same occupation, any openings made in the party walls dividing the same shall be stopped up with brick or stonework of the full thickness of the wall itself, and properly bonded therewith.

As to Open Spaces near Dwelling Houses.

XXIX. Every building used or intended to be used as a dwelling house, unless all the rooms can be lighted and ventilated from a street or alley adjoining, shall have in the rear or on the side thereof an open space exclusively belonging thereto of the extent at least of one hundred square feet.

Construction of Public Buildings.

XXX. Notwithstanding anything herein contained, every public building, including the walls, roofs, floors, galleries, and staircases, shall be constructed in such manner as may be approved by the district surveyor, or, in the event of disagreement, may be determined by the Metropolitan Board; and, save in so far as respects the rules of construction, every public building shall throughout this Act be deemed to be included in the term "building," and be subject to all the provisions of this Act, in the same manner as if it were a building erected for a purpose other than a public purpose.

NOTICES TO DISTRICT SURVEYORS.

Notices to be given to District Surveyor by Builder.

XXXVIII. Two days before the following acts or event (seven days notice in writing must be given to the vestry or district board before laying or digging out the foundation of any new house or building, or rebuilding any house or building, and also before making any drain for the purpose of draining into any sewer under the jurisdiction of such vestry board; 18 & 19 Vict., c. 120, s. 76); that is to say,

Two days (the day of the service of the notice is excluded from the computation) before any building, or any work to, in, or upon any building, is commenced, and also, if the progress of any such building or work is after the commencement thereof suspended for any period exceeding three months, two days before such building or work is resumed, and also if during the progress of any such building or work the builder employed thereon is changed, then two days before any new builder enters upon the continuance of such building or work,

It shall be the duty of the builder engaged in building or rebuilding such building, or in executing such work, or in continuing such building or work, to give to the district surveyor notice in writing stating the situation, area, and height, and intended use of the building or buildings about to be commenced, or to, in, or upon which any work is to be done, and the number of such buildings if more than one, and also the particulars of any such proposed work, and stating also his own name and address; but any works to, in, or upon the same building that are in progress at the same time may be included in one notice.

District Surveyor to cause Rules of this Act to be observed.

XXXIX. Every district surveyor shall, upon the receipt of any such notice as aforesaid, and also upon any work effected by the rules of this Act, but in respect of which no notice has been given, being observed by or made known to him, and also from time to time during the progress of any works affected by the rules and directions of this Act, as often as may be necessary for securing the due observance of such rules, survey any building or work hereby placed under their supervision, and cause all the rules of this Act to be duly observed.

Notice to be Evidence of intended Works.

XL. Every notice given in pursuance of this Act shall be deemed, in any question relative to any building or work, to be *primâ facie* evidence as against such building, the nature of the building or work proposed to be built or done.

Penalty on Builders neglecting to give Notice.

XLI. If any builder neglects to give notice in any of the cases aforesaid, or executes any works of which he is hereby required to give notice before giving the same, or having given due notice of any works executes the same before the expiration of two days from the time of giving such notice, such builder shall for every such offence incur a penalty not exceeding twenty pounds, to be recovered before a justice of the peace.

PART III.—PARTY STRUCTURES.

PRELIMINARY.

Definition of Building Owner and Adjoining Owner.

LXXXII. In the construction of the following provisions relating to party structures, such one of the owners of the premises separated by or adjoining to any party structure as is desirous of executing any work in respect to such party structure shall be called the "building owner," and the owner of the other premises shall be called the "adjoining owner."

RIGHTS OF BUILDING AND ADJOINING OWNERS.

Rights of Building Owner.

LXXXIII. The building owner shall have the following rights in relation to party structures; that is to say,

1.—A right to make good or repair any party structure that is defective or out of repair.

2.—A right to pull down and rebuild any party structure that is so far defective or out of repair as to make it necessary or desirable to pull down the same.

3.—A right to pull down any timber or other partition that divides any buildings, and is not conformable with the regulations of this Act, and to build instead a party wall conformable thereto.

4.—In the case of buildings having rooms or stories, the property of different owners intermixed, a right to pull down such of the said rooms or stories or any part thereof as are not built in conformity with this Act, and to rebuild in conformity with this Act.

5.—In the case of buildings connected by arches or communications over public ways, or over passages belonging to other persons, a right to pull down such of the said buildings, arches, or communications, or any part thereof, as are not built in conformity with this Act, and to rebuild the same in conformity with this Act.

6.—A right to raise any party structure permitted by this Act to be raised, or any external wall built against such party structure, upon condition of making good all damage occasioned thereby to the adjoining premises or to the internal finishings and decorations thereof, and of carrying up to the requisite height all flues and chimney stacks belonging to the adjoining owner, on or against such party structure or external wall.

7.—A right to pull down any party structure that is of insufficient strength for any building intended to be built, and to rebuild the same of sufficient strength for the above purpose, upon condition of making good all damage occasioned thereby to the adjoining premises, or to the internal finishings and decorations thereof.

8.—A right to cut into any party structure upon condition of making good all damage occasioned to the adjoining premises by such operation.

9.—A right to cut away any footing or any chimney breasts, jambs, or flues projecting from any party wall, in order to erect an external wall against such party wall, or for any other purpose, upon condition of making good all damage occasioned to the adjoining premises by such operation.

10.—A right to cut away or take down such parts of any wall or building of an adjoining owner as may be necessary in consequence of such wall or building overhanging the ground of the building owner, in order to erect an upright wall against the same, on condition of making good any damage sustained by the wall or building by reason of such cutting away or taking down.

11.—A right to perform any other necessary works incident to the connexion of party structure with the premises adjoining thereto.

But the above rights shall be subject to this qualification, that any building which has been erected previously to the time of this Act coming into operation shall be deemed to be conformable with the provisions of this Act if it is conformable with the provisions of an Act passed in the fourteenth year of his late Majesty King George the Third, chapter seventy-eight, or with the provisions of the said Act of the eighth year of her present Majesty, chapter eighty-four.

Rights of Adjoining Owner.

LXXXIV. Whenever the building owner proposes to exercise any of the foregoing rights with respect to party structures the adjoining owner may require the building owner to build on any such party structure certain chimney jambs, breasts, or flues, or certain piers or recesses, or any other like works for the convenience of such adjoining owner: and it shall be the duty of the building owner to comply with such requisition in all cases where the execution of the required works will not be injurious to the building owner, or cause to him unnecessary inconvenience or unnecessary delay in the exercise of his right; and any difference that arises between any building owner and adjoining owner in the respect of the execution of such works as aforesaid shall be determined in manner in which differences between building owners and adjoining owners are hereinafter directed to be determined.

Rules as to Exercise of Rights by Building and Adjoining Owners.

LXXXV. The following rules shall be observed with respect to the exercise by building owners and adjoining owners of their respective rights:—

1.—No building owner shall, except with the consent of the adjoining owner, or in cases where any party structure is dangerous, in which cases the provisions hereby made as to dangerous structures shall apply, exercise any right hereby given in respect of any party structure, unless he has given at the least three months previous notice to the adjoining owner by delivering the same to him personally, or by sending it by post in a registered letter addressed to such owner at his last known place of abode.

2.—The notice so given shall be in writing or printed, and shall state the nature of the proposed work, and the time at which such work is proposed to be commenced.

3.—No building owner shall exercise any right hereby given to him in such manner or at such time as to cause unnecessary inconvenience to the adjoining owner.

4.—Upon the receipt of such notice the adjoining owner may require the building owner to build or may himself build on any such party structure any works to the construction of which he is hereinbefore mentioned to be entitled.

5.—Any requisition so made by an adjoining owner shall be in writing or printed, and shall be delivered personally to the building owner within one month after the date of the notice being given by him, or be sent by post in a registered letter addressed to him at his last known place of residence. It shall specify the works required by the adjoining owner for his convenience, and shall if necessary be accompanied with explanatory plans and drawings.

6.—If either owner does not, within fourteen days after the delivery to him of any notice or requisition, express his consent thereto, he shall be considered as having dissented therefrom, and thereupon a difference shall be deemed to have arisen between the building owner and the adjoining owner.

7.—In all cases not hereby specially provided for where a difference arises between a building owner and adjoining owner in respect of any matter arising under this Act, unless both parties concur in the appointment of one surveyor, they shall each appoint a surveyor, and the two surveyors so appointed shall select a third surveyor, and such one surveyor or three surveyors, or any two of them, shall settle any matter in dispute between such building and adjoining owner, with power by his or their award to determine the right to do, and the time and manner of doing any work, and generally any other matter arising out of or incidental to such difference; but any time so appointed for doing any work shall not commence until after the expiration of such period of three months, as is hereinbefore mentioned.

8.—Any award given by such one surveyor, or by such three surveyors, or any two of them, shall be conclusive, and shall not be questioned in any court, with this exception, that either of the parties to the difference may appeal therefrom to the county court within fourteen days from the date of the delivery of any such award as aforesaid, and such county court, subject as hereinafter mentioned, may rescind or modify the award so given in such manner as it thinks just.

9.—If either party to the difference makes default in appointing a surveyor for ten days after notice has been given to him by the other party in manner aforesaid to make such appointment, the party giving the notice may make the appointment in the place of the party so making default.

10.—The costs incurred in obtaining any such award as aforesaid shall be paid by such party as such one surveyor, or three surveyors, or any two of them, may determine.

11.—If the appellant from any such award as aforesaid, on appearing before the county court, declares his unwillingness to have the matter decided by such court, and proves to the satisfaction of the judge of such court that in the event of the matter being decided against him he will be liable to pay a sum, exclusive of costs, exceeding fifty pounds, and gives security, to be approved by such judge, duly to prosecute his appeal and to abide the event thereof, all proceedings in the county court shall thereupon be stayed; and it shall be lawful for such appellant to bring an action in one of her Majesty's superior courts of law at Westminster against the other party to the difference; and the plaintiff in such action shall deliver to the defendants an issue or issues whereby the matters in difference between them may be tried; and the form of such issue or issues, in case of dispute, or in case of the non-appearance of the defendant, shall be settled by the court in which the action is brought; and such action shall be prosecuted and issue or issues tried in the same manner and subject to the same incidents in and subject to which actions are prosecuted and issues tried in other cases within the jurisdiction of such court, or as near thereto as circumstances admit.

12.—If the parties to any such action agree as to the facts, a special case may be stated for the opinion of any such superior court as aforesaid, and any case so stated may be brought before the court in like manner and subject to the same incidents in and subject to which other special cases are brought before such court, or as near thereto as circumstances admit; and any costs that may have been incurred in the county court by the parties to such action as is mentioned in this section shall be deemed to be costs incurred in such action, and be payable accordingly.

Power for Building Owner to make Entry on Premises to effect Works.—Penalty on Persons obstructing

LXXXVI. Whenever any building owner has become entitled, in pursuance of this Act, to execute any work, it shall be lawful for him, his servants, agents, or workmen, at all usual times of working, to enter on any premises, for the purpose of executing and to execute such work, removing any furniture, or doing any other thing that may be necessary, and if such premises are closed he or they may, accompanied by a constable or other officer of the peace, break open any doors in order to such entry; and any owner or other person that hinders or obstructs any workman employed for any of the purposes aforesaid, or wilfully damages or injures the said work, shall incur for every such offence a penalty not exceeding ten pounds, to be recovered before a justice of the peace.

Security to be given by Building Owner, if required by Adjoining Owner.

LXXXVII. Any adjoining owner may, if he thinks fit, by notice in writing given by himself or his agent, require the building owner, before commencing any work which he may be authorised by this Act to execute, to give such security as may be agreed upon, or in case of difference may be settled by the judge of the county court, for the payment of all such costs and compensation in respect of such work as may be payable by such building owner.

Rules as to Expenses in respect of Party Structure.

LXXXVIII. The following rules shall be observed as to expenses in respect of any party structure; that is to say,

As to expenses to be borne jointly by the building owner and adjoining owner.

1.—If any party structure is defective or out of repair the expense of making good or repairing the same shall be borne by the building owner and adjoining owner in due proportion, regard being had to the use that each owner makes of such structure.

2.—If any party structure is pulled down and rebuilt by reason of its being so far defective or out of repair as to make it necessary or desirable to pull down the same, the expense of such pulling down and rebuilding shall be borne by the building owner and adjoining owner in due proportion, regard being had to the use that each owner makes of such structure.

3.—If any timber or other partition dividing any building is pulled down in exercise of the right hereinbefore vested in a building owner, and a party structure built instead thereof, the expense of building such party structure, and also of building any additional party structures that may be required by reason of such partition having been pulled down, shall be borne by the building owner and adjoining owner, in due proportion, regard being had to the use that each owner makes of such party structure, and to the thickness required to the respective buildings parted thereby.

4.—If any room or stories, or any part of rooms or stories, the property of different owners, and intermixed in any building, are pulled down in pursuance of the right hereinbefore vested in any building owner, and rebuilt in conformity with this Act, the expense of such pulling down and rebuilding shall be borne by the building owner and adjoining owner, in due proportion, regard being had to the use that each owner makes of such rooms or stories.

5.—If any arches or communications, or any parts thereof are pulled down in pursuance of the right hereinbefore vested in any building owner, and rebuilt in conformity with this Act, the expense of such pulling down and rebuilding shall be borne by the building owner and adjoining owner in due proportion, regard being had to the use that each owner makes of such arches or communications.

As to expenses to be borne by building owner:—

6.—If any party structure or external wall built against the same is raised in pursuance of the power hereinbefore vested in any building owner, the expense of raising the same, and of making good all such damage, and of carrying up to the requisite height all such flues and chimneys as are hereinbefore required to be made good and carried up, shall be borne by the building owner.

7.—If any party structure which is of proper materials and sound, or not so far defective or out of repair as to make it necessary or desirable to pull down the same, is pulled down and rebuilt by the building owner, the expenses of pulling down and rebuilding the same, and of making good all such damage as is hereinbefore required to be made good, shall be borne by the building owner.

8.—If any party structure is cut into by the building owner, the expense of cutting into the same, and of making good any damage hereinbefore required to be made good, shall be borne by such building owner.

9.—If any footing, chimney breast, jambs, or floor is cut away in pursuance of the powers hereinbefore vested in any building owner, the expense of such cutting away, and of making good any damage hereinbefore required to be made good, shall be borne by the building owner.

Account of Expenses of Works to be delivered to Adjoining Owner within One Month.

LXXXIX. Within one month after the completion of any work which any building owner is by this Act authorised or required to execute, and the expense of which is in whole or in part to be borne by an adjoining owner, such building owner shall deliver to the adjoining owner an account in writing of the expense of the work, specifying any deduction to which such adjoining owner or other person may be entitled in respect of old materials, or in other respects; and every such work as aforesaid shall be estimated and valued at fair average rates and prices, according to the nature of the work and the locality, and the market price of materials and labour at the time.

Adjoining Owner may Appeal against Account.

XC. At any time within one month after the delivery of such account, the adjoining owner, if dissatisfied therewith, may declare his dissatisfaction to the party delivering the same, by notice in writing given by himself or his agent, and specifying his objections thereto; and upon such notice having been given a difference shall be deemed to have arisen between the parties, and such difference shall be determined in manner hereinbefore provided for the determination of differences between building and adjoining owners.

Building Owner may recover, if no Appeal made.

XCI. If within such period of one month as aforesaid the party receiving such account does not declare in manner aforesaid his dissatisfaction therewith, he shall be deemed to have accepted the same, and shall pay the same, on demand, to the party delivering the account, and if he fails to do so the amount so due may be recovered as a debt.

Penalty on Delay of Payment by Adjoining Owner.

XCII. Where the adjoining owner is liable to contribute to the expenses of building any party structure, until such contribution is paid the building owner at whose expense the same was built shall stand possessed of the sole property in such structure.

As to Expenses incurred on Requisition of Adjoining Owner

XCIII. Where any building owner has incurred any expenses on the requisition of an adjoining owner, the adjoining owner making such requisition shall be liable for all such expenses, and in default of payment the same may be recovered from him as a debt.

Penalty on Building Owner failing to execute required Works.

XCIV. Where any building owner is, by the third part of this Act, liable to make good any damage he may occasion to the property of the adjoining owner by any works authorised to be executed by him, or to do any other thing upon condition of doing which his right to execute such works is hereby limited to arise, and such building owner fails within a reasonable time to make good such damage or to do such thing, he shall incur a penalty, to be recovered before a justice of the peace, not exceeding twenty pounds for each day during which such failure continues.

Consent how given on behalf of Persons under Disability.

XCV. Where, in pursuance of this Act, any consent is required to be given, any notice to be served, or any other thing to be done by, on, or to any owner under disability, such consent may be given, such notice may be served, and such thing may be done by, on, or to the following persons, on behalf of such persons under disability; that is to say,

By, on, or to a husband, on behalf of his wife.

By, on, or to a trustee, on behalf of his cestuique trust.

By, on, or to a guardian or committee, on behalf of an infant, idiot, or lunatic.

Consent how given on behalf of Persons not to be found.

XCVI. Where any consent is required to be given or any other thing to be done by any owner in pursuance of this Act, if there is no owner capable of giving such consent or of doing such thing, and no person empowered by this Act to give such consent or to do such thing on behalf of such owner, or if any owner so capable, or any person so empowered, cannot be found, the judge of the county court shall have power to give such consent or do or cause to be done such thing on behalf of such owner, upon such terms and subject to such conditions as he may think fit, having regard alike to the nature and purpose of the subject matter in respect of which such consent is to be given, and to the fair claims of the parties on whose behalf such consent is to be given; and such judge shall have power to dispense with the service of any notice which would otherwise be required to be served.

FIRST SCHEDULE.

PRELIMINARY.

Structure of Buildings

1.—Every building shall be enclosed with walls constructed of brick, stone, or other hard and incombustible substances, and the foundation shall rest on the solid ground, or upon concrete or upon other solid substructure.

Construction of Walls of Brick, Stone, &c.

2.—Every wall constructed of brick, stone, or other similar substances shall be properly bonded and solidly put together with mortar or cement, and no part of such wall shall overhang any part underneath it, and all return walls shall be properly bonded together.

Extra Thickness of certain Stone Walls.

3.—The thickness of every stone wall in which the beds of the masonry are not laid horizontally shall be one-third greater than the thickness prescribed for stone walls in the rules hereinafter contained.

Thickness of Walls.

4.—The thickness of every wall as hereinafter determined shall be the minimum thickness.

Height of Story.

5.—The height of every topmost story shall be measured from the level of its floor up to the under side of the tie of the roof, or up to half the vertical height of the rafters, when the roof has no tie; and the height of every other story shall be the clear height of such story exclusive of the thickness of the floor.

Height of External and Party Walls.

6.—The height of every external and party wall shall be measured from the base of the wall to the level of the top of the topmost story.

Length of Walls.

7.—Walls are deemed to be divided into distinct lengths by return walls, and the length of every wall is measured from the centre of one return wall to the centre of another; provided that such return walls are external, party, or cross walls of the thickness hereinafter required, and bonded into the walls so deemed to be divided.

Footings of Walls.

8.—The projection of the bottom of the footing of every wall, on each side of the wall, shall be at least equal to one-half of the thickness of the wall at its base; and the diminution of the footing of every wall shall be formed in regular offsets, and the height from the bottom of such footing to the base of the wall shall be at the least equal to one-half of the thickness of the wall at its base.

RULES FOR THE WALLS OF DWELLING-HOUSES.

Thickness of Walls of Dwelling Houses.

1.—The external and party walls of dwelling houses shall be made throughout the different stories of the thickness shown in the following table, arranged according to the heights and lengths of the walls, and calculated for walls up to one hundred feet in height, and supposed to be built of bricks not less than eight and a half inches and not more than nine and a half inches in length, the heights of the stories being subject to the condition hereinafter given.

2.—TABLE.

Height up to 100 feet.		
Length up to 45 feet. Two stories, 21½ inches. Three stories, 17½ inches. Remainder, 13 inches.	*Length up to 80 feet.* Two stories, 26 inches. Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length unlimited.* One story, 30 inches. Two stories, 26 inches. Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.
Height up to 90 feet.		
Length up to 45 feet. Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length up to 70 feet.* One story, 26 inches. Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length unlimited.* One story, 30 inches. Two stories, 26 inches. One story, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.
Height up to 80 feet.		
Length up to 40 feet. One story, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length up to 60 feet.* Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length unlimited.* One story, 26 inches. Two stories, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.
Height up to 70 feet.		
Length up to 40 feet. Two stories, 17½ inches. Remainder, 13 inches.	*Length up to 55 feet.* One story, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.	*Length unlimited.* One story, 26 inches. Two stories, 21½ inches. One story, 17½ inches. Remainder, 13 inches.
Height up to 60 feet.		
Length up to 30 feet. One story, 17½ inches. Remainder, 13 inches.	*Length up to 50 feet.* Two stories, 17½ inches. Remainder, 13 inches.	*Length unlimited.* One story, 21½ inches. Two stories, 17½ inches. Remainder, 13 inches.
Height up to 50 feet.		
Length up to 30 feet. Wall below the topmost story, 13 inches. Topmost story, 8½ inches. Remainder, 8½ inches.	*Length up to 45 feet.* One story, 17½ inches. Rest of wall below topmost story, 13 inches. Topmost story, 8½ inches. Remainder. 8½ inches.	*Length unlimited.* One story, 21½ inches. One story, 17½ inches. Remainder, 13 inches.

2.—TABLE (*continued*).

Height up to 40 feet.	
Length up to 35 feet. Wall below two topmost stories, 13 inches. Two topmost stories, 8½ inches. Remainder, 8½ inches.	*Length unlimited.* One story, 17½ inches. Rest of wall below topmost story, 13 inches. Topmost story, 8½ inches. Remainder, 8½ inches.
Height up to 30 feet.	
Length up to 35 feet. Wall below two topmost stories, 13 inches. Two topmost stories, 8½ inches. Remainder, 8½ inches.	*Length unlimited.* Wall below topmost story, 13 inches. Topmost story, 8½ inches. Remainder, 8½ inches.
Height up to 25 feet.	
Length up to 30 feet. From base to top of wall, 8½ inches.	*Length unlimited.* Wall below topmost story, 13 inches. Topmost story, 8½ inches. Remainder, 8½ inches.

Explanation of Table.

3.—The thickness of the wall in each story is given in inches, and begins with the wall from the base upwards.

Qualification in case of certain Walls.

4.—If any external or party wall, measured from centre to centre, is not more than twenty-five feet distant from any other external or party wall to which it is tied by the beams of any floor or floors, other than the ground floor, or the floor of any story formed in the roof, the length of such wall is not to be taken into consideration, and the thickness of the wall will be found in the first vertical column in the above table.

Condition in respect of Stories exceeding a certain Height.

5.—If any story exceeds in height sixteen times the thickness prescribed for the walls of such story in the above table, the thickness of each external and party wall throughout such story shall be increased to one-sixteenth part of the height of the story; but any such additional thickness may be confined to piers properly distributed, of which the collective widths amount to one-fourth part of the length of the wall.

Restriction in case of certain Stories.

6.—No story enclosed with walls less than thirteen inches in thickness shall be more than ten feet in height.

Thickness of Walls built of Materials other than such Bricks as aforesaid.

7.—The thickness of any wall of a dwelling house, if built of materials other than such bricks as aforesaid, shall be deemed to be sufficient if made of the thickness required by the above table, or of such less thickness as may be approved by the Metropolitan Board, with this exception, that in the case of walls built of stone in which the beds of the masonry are not laid horizontally no diminution shall be allowed in the thickness required by the foregoing rules for such last-mentioned walls.

MISCELLANEOUS.

Cross Walls.

1.—The thickness of a cross wall shall be two-thirds of the thickness hereinbefore required for an external or party wall of the same dimensions, and belonging to the same class of buildings, but never less than eight and a half inches, and no wall subdividing any building shall be deemed to be a cross wall unless it is carried up to two-thirds of the height of the external or party walls, and unless the recesses and openings therein do not exceed one-half of the vertical surface of the wall in each story.

Extra Thickness of certain Stone Walls.

2.—The thickness of every stone wall in which the beds of the masonry are not laid horizontally shall be one-third greater than the thickness prescribed in the rules aforesaid.

3.—Buildings to which the preceding rules are inapplicable require the special sanction of the Metropolitan Board of Works.

SECT. 4.—PLANS OF HOUSES SUITED TO TOWNS.

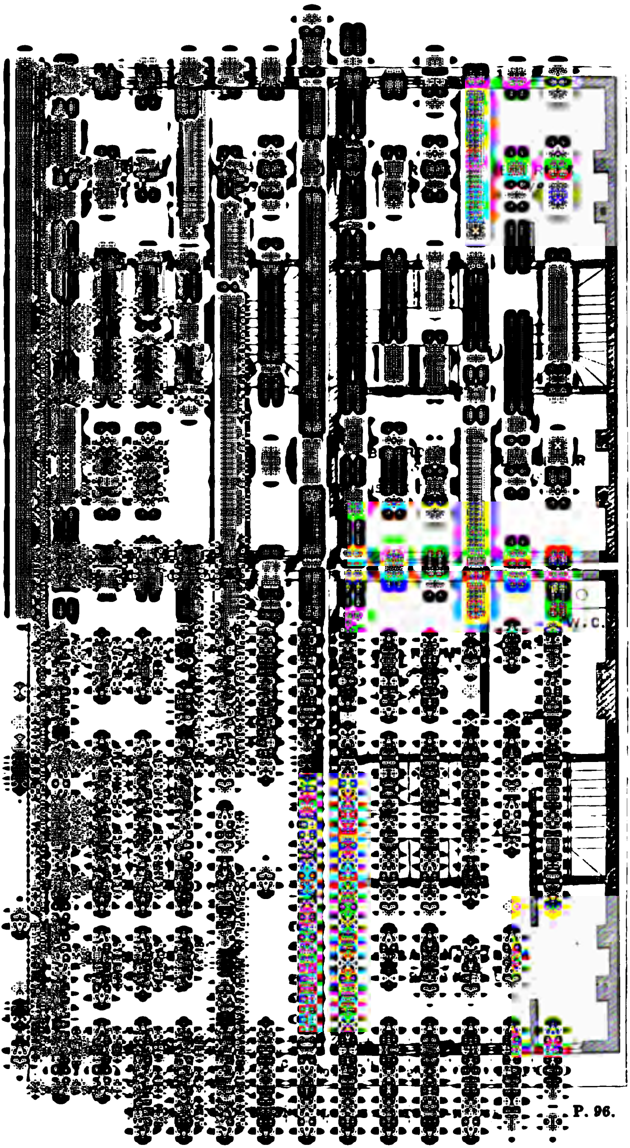
SUB-SECT. A.—THE SIXTEEN-ROOMED HOUSE.

188. I have already said, that the arrangements of the house to be built in a town will vary considerably from those which may be indulged in among the open fields. Here every yard is of great value, and, consequently, the house must stand on little ground, as compared with its accommodation. Hence it is that we are induced to build a house of the description which I am now alluding to upon an area of not more than 15 squares, or 50 feet by 30 feet—a very common plot of ground for the purpose. This in rural districts would be thought barely enough for a six-roomed cottage; and such would be the case, because on this area must be grouped three rooms and a staircase, as well as the entrance-passage, and giving just the smallest living rooms which can be considered healthy, one on each side the door, and each about 16 feet by 12 feet. But, by inspecting the plans marked *figs.* 47, A, B, C, and D, and *figs.* 48 and 49, it will be seen that by carrying story over story a large and roomy house may be constructed, composed of sixteen rooms, besides dressing-rooms, and quite sufficient for any ordinary family. In it are good-sized dining and drawing-rooms, with a corresponding library and eight bedrooms, in addition to two servants' rooms in the roof. In the plan here given the kitchens are underground, which is universally the custom in London; but this will make little difference, as, in case of there being room for them, they may be easily added at the back under a separate roof. In a house of this description the front and back walls require to be of a solid construction; and even when beyond the limits of the Metropolitan Building Act they should strictly comply with the scale therein recommended.

189. THE SPECIFICATION for such a house, of the best materials, should run somewhat in the following form, but in many respects a great reduction or increase of cost may be effected. The materials specified are of an average value, sufficient for all ordinary purposes; and the work may be contracted for together, or under the following separate heads:—

1.—THE EXCAVATOR.—To take down all old buildings on the site of the intended house; clean, sort, and stack the bricks, taking care to keep all smoky bricks separate; cart away the rubbish, all other materials to be carefully put by; to dig out the foundations to the extent shown in plan (*fig.* 49), and beat down to a solid consistence the ground forming the beds of trenches for receiving the footings. Also, to fill in and ram down the ground after the foundations are laid, and to level it in accordance with the said plan; to pump out and remove all soil and water which may interfere with laying the foundations, whether from springs, drains, cesspools, or any other cause.

2.—BRICKLAYER.—The brickwork, except the front, to be executed with the best gray, or red, stocks, to be laid in flat joints, so that every four courses shall not exceed 11½ inches in height. The bond to be English (or Flemish, *if preferred*), and the work to be grouted after every third course up to the top of the 14-inch work. No bats to be allowed except for closures; and no place or samile bricks to be used, under a penalty of 1s. for every brick so used. A layer of concrete (here describe the thickness according to the nature of the foundation) to be shot from a stage into all the foundation-trenches. The concrete to be made of six parts unscreened clean ballast or gravel and one of stone lime. A horizontal layer of slate to be set in Parker's cement six courses above the level of the area. The front to be executed in Suffolk white bricks, with the headers left perfect wherever possible. The work to be carried up with flat parallel rule joint. The arches, 14 or 9 inches deep, and the cornices and mouldings to be all of moulded bricks according to plan, and the bricklayer to procure such patterns where necessary. The upper courses of each cornice to be set in Parker's cement. Turn and parget all chimney flues, and finish the shafts with salient courses six inches in height, and provide a proper-sized square chimney mould for each, of Terra cotta. Turn trimmers of 4-inch brickwork to all the fire-places for the hearths, except in the basement floor Turn four arches, for cellars, of bricks nine inches deep. Lay 6-inch drain-pipes (Jennings' patent) from soil-pipe to cesspool, or main culvert, as the case may be; also, from basement to the same; the pipes to be set in cement. Cut all splays or ramps where wanted, and set a grate in each opening, as well as a copper in scullery. To provide good and sufficient scaffolding, and ladders, &c., which are to remain until the whole is covered in, and the plumbing work finished, without extra charge for the use of them by the various tradesmen. To be answerable for all damage that may occur to the work by settlement during the time of building, and to perform all the various jobbing work connected with the bricklaying department, which is usually required in such a building. The whole to be completed in a workmanlike manner.



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The mortar to be made of one part stone-lime to three parts of sharp, clean sand, and not to be used more than 48 hours after mixing.

3.—CARPENTER.—To provide and fix proper hoarding, and remove the same when done with. To lay all the naked floors when required by the bricklayer, and also the lentils, bond-timber, and wall-plates, as demanded. To prepare and fix centring for four cellar arches, as shown in plan, and strike and remove the same when done with. To prepare and lay oak sleepers, 5 inches by 4, in basement floors, properly trimmed to chimney. To prepare and lay properly trimmed naked floors of Riga, Dantzic, or Memel yellow fir (*red deal*, north of the London district); those of the front part being 11 inches by 2½, and of the back 9 inches by 2½. Strut the same, and prepare sound boards for pugging over dining and drawing-room, and library. Insert one tier of bond-timber in each story, and carry it through the front windows to be cut off when the work is settled. Prepare and fix wall-plates, 6 inches by 4, under each floor and the roof, and notch the joists and rafters into them. Prepare and fix all wooden partitions, shown in the plan, and truss the same when necessary. Prepare two pair of trussed principals with queen-posts, and fix the same; and find and fix all iron bolts, straps, &c., necessary for them. To provide a purline for each side of the roof, 8 inches by 5, and also the common rafters for the whole. To trim these for chimneys and skylights, and prepare gutter-boards at the backs of the chimneys. The whole of this work to be executed at such times as may be convenient to the bricklayers, and with the use of their ladders and scaffolding.

4.—SLATER.—To fix slate battens, 2½ inches by 1 inch, and cover the roof with the best blue Bangor duchess slates, using only copper nails (or zinc or galvanized iron, if cheapness is desired). To cap the ridge with roll top-ridge tiles, carefully jointed and filleted with cement, but set in mortar.

5.—PLUMBER.—To provide and fix 7-lb. milled lead for gutters at backs of chimneys, and cut in stepwise and fix 7-inch flushings to same. To cap skylights with 7-lb. milled, which is also to be turned down all round with aprons to the same of 6-lb. lead, 10 inches wide. To provide and fix zinc, or iron, spouting with a proper slope from front to back, and carry the water from the chimney-gutter to the same. To fix cast-iron heads and 3-inch pipes at each angle of the building at the back, and carry the same into the drains. The joints of the pipes to be securely bedded with white-lead. (This will complete the carcass, which it is better to do in one contract than in separate ones, up to this point, leaving the remainder to be executed in detail.)

PLUMBER (*continued*).—To lay on service water-pipes with ¾-inch lead pipes to two cisterns, and provide the same with copper balls and cocks complete. To line wooden cisterns with milled sheet-lead (bottom 9 lb., sides 6 lb. to the foot), and solder the same; also to furnish and fix waste pipes to same, leading to drain. To line the scullery sink with lead 8 lb. to the foot, turning well over the woodwork, and fix a sufficient waste pipe with brass grated bell-trap. Also, to fix here a brass cock and lead service-pipe, leading from the lower cistern. Fix and provide all the plumber's work for two water-closets, viz.:—1st. Best patent valve apparatus, with blue-ware pan, iron container, copper, tinned basin, strong D trap. Jennings' patent cistern valve and pipe to pan, 1-inch supply pipe, ¾-inch waste pipe, and 4½-inch soil pipe, of 8 lbs. to the foot milled lead; also, all other handles, wires, pipes, cranks, and all fittings necessary for its proper working (see *fig.* 42). 2nd. To provide and fit lower closet with Jennings' patent glazed earthen syphon closet, fitted with his cistern valve, as in No. 1, and supplied from the same cistern, but worked by a simple chain, as shown in *fig.* 44. (If water is not laid on, to provide pumps, &c., for the purpose, according to the nature of the situation.)

6.—PLASTERER.—To lathe, plaster, float, and set all ceilings and strings of staircases, also the quartered partitions. To render, float, and set, all brickwork in attic and basement stories, and in all the rooms but the dining-room, which is to be finished with trowelled stucco, with the quirks of the quoins properly cut. All the soffits of the arches to be executed in gauged stuff in the best manner, and the quoins properly quirked. To run plaster cornices in such rooms as may be fixed upon of girths and enrichments, described in drawings and plans. The enrichments and centre ornaments to be executed in plaster (or *papier maché*, as decided on). The basement and ground story to have a skirting of Parker's cement, the former with a 6-inch *torus* moulding, and the latter with a 12-inch ogee reverse. Stucco all internal reveals, and the external at the back of the house. The lathing throughout to be executed with lath and a half heart of fir laths, free from sap. To fill in upon the sound boarding (or slates) with good lime and hay pugging mortar, 1½-inch in thickness, and finish off the same, leaving no cracks or crevices.

7.—JOINER.—To fix proper grounds, cradles, brackets, and angle beads for plasterer. To prepare and fix skylight frame and light of best Riga deal. To lay 1½-inch batten floor of best Riga deal (yellow or red), edge-nailed and tongued headings in basement floors, in dining and drawing-rooms, and library, and in passages on basement floor. To lay 1½-inch wainscot floor in front-hall, edge-nailed and tongued headings. To lay all other floors with white spruce, 1¼-inch batten, floor laid straight joint, and splayed headings. To prepare and fix a best staircase, from ground floor to third floor, according to plan, of best red pine, free from knots, 1¾-inch treads, 1-inch risers, mitred to cut string, and dovetailed to balusters, glued up and blocked to close string; moulded nosings, with three fir carriages, and framed ditto, to landings. Curtail step, properly turned and veneered. Prepare pattern for and fix ornamental wrought-iron centre-pillar to ditto, and cast-iron balusters, continuous Spanish mahogany hand-rail, 2½-inches, wreathed and twisted with curtail scroll. Prepare and fix skirtings in each room, above the ground floor, of yellow pine, and according to pattern; also, prepare and fix dog-legged back staircase, with deal balusters and hand-rail, from basement to attics. Prepare and fix box-shutters to dining-room and library windows, with proper framed and moulded backs, elbows, and soffits; also to drawing-room windows. Prepare and fix plain shutters and flaps (not boxed) for kitchen and scullery windows, and fix proper fastenings to all the shutters. Prepare, fix, and hang 2½-inch front-door, of best Riga (red or yellow) deal; panels flush bead, butt, and moulded, with moulded 1½-inch jambs and fanlights, according to plan. Prepare, fix, and hang back-door, with light in upper panels, of 2-inch yellow deal, four panels bead flush and square, with plain 1½-inch jambs. Prepare, fix, and hang 2-inch yellow pine doors to dining-room, library, cloak-room, and five others on first-floor landing; all to be four panels moulded on both sides, with plain 1½-inch jambs, but rebated on both edges, and all to have brass butt-hinges and mortise-locks, with furniture, to be selected at — per set. Prepare and fix all other bed-room and closet-doors of 1½-inch yellow pine, four panels moulded on both sides, plain 1½-inch jambs; all to have iron butt-hinges, with rim-locks and brass furniture. Prepare, fix, and hang sashes and sash-frames as follows, viz.:—Basement floors—deal-cased frame for 1½-inch sashes, oak sunk sill with brass pulleys for single hanging; 1½-in. deal ovolo sashes, with patent cord, weights, and fastenings complete. Ground floor—deal-cased frames, oak sunk sill with brass axle pulleys, and wainscot pulley pieces for double hangings; 2-inch deal astragal and hollow sashes, patent line, weights, and fastenings complete. First floor—solid fir wrought frames for 2-inch French casements and oak sunk sills, with iron water bar; 2-inch wainscot (or old oak) astragal and hollow casements, hung with brass hinges, tongued and rebated; also double rebated and weathered at bottom. The fastenings to be brass Espagnolette bolts, accurately fixed. Back bed-rooms to have 1½-inch deal ovolo sashes and frames similar to basement. Second floor front windows similar to dining-room. Third floor, ditto ditto, but with circular heads. Attic windows, circular deal astragal and hollow in front, ovolo at the back, pivoted in the middle. Best water-closet fitted up with Spanish mahogany seat and cover, and with mahogany casings to pipes to match. Lower closet fitted with best wrought and framed Riga deal. All other shelves and extra closets to be put up at — per foot extra, superficial measure. If the drawing-room is to be divided off, prepare and fix folding-doors, or sliding-doors, to match other doors (specify the plans and hinges, &c.) Prepare and fix 1½-inch deal cases for cisterns. Provide and fix a dresser in kitchen, of 2-inch deal with cross-tongued top, 10 feet long, and 2 feet 9 inches wide, supported on strong framed legs and bearers, 1-inch deal pot board and bearers. Six 1¼-inch sunk shelves, whose widths shall average 7 inches. Back of shelves of 1-inch deal, wrought, beaded, grooved, and cross-tongued; 1-inch deal top, 14 inches wide, with moulded cornices. Five drawers with bottoms and dovetailed rims of ¾-inch deal. The fronts of 1-inch deal, beaded, and each provided with a brass drop-handle, and a patent tumbler-lock.

8.—**Mason.**—To provide and lay in cement a 2-inch slate (or Portland stone) floor for balconies, the edges moulded, as in plan *(see frontispiece)*; and also similar sills for the French windows, all set in Parker's cement; the floor to be supported on cantilevers of Portland stone of the pattern shown in plan; and to cut holes for the iron-work. The whole of the sash windows to be provided with Portland stone sills, 9½ inches by 6, properly sunk, throated, and weathered, which the contractor is to set in cement. To provide and fix proper Yorkshire stone steps to front-door, and to lay the front and back area with 2½-inch rubbed Yorkshire stone paving. To provide and lay slate hearthstones for each fire-place, cut to fit the jambs of mantel-pieces, and to fix such mantel-pieces in each room as may be agreed upon. To fit up the wine-cellar with 1½-inch slate slabs, set in brickwork.

9.—**Glazier.**—To glaze all the windows except those specified beneath, with best Newcastle crown-glass, the whole to be properly bedded, sprigged, and back-puttied, and left whole and clean at the end of the work. The dining and drawing-room windows, and the second-floor front windows, to be glazed with best plate-glass, four panes to each window, to be obtained from the ——— Company.

10.—**Founder, Smith, and Ironmonger.**—Provide chimney-bars for kitchen and scullery chimneys, also for dining and drawing-room chimneys, and for library ditto. Provide all bolts, straps, screws, washers, and other wrought-ironwork for roof, &c., at —— per lb. Cast-iron balusters to pattern, and prepare wrought-iron ditto ditto. Prepare and fix iron-railing for front area and for balconies, according to pattern. Provide grates, stoves, coppers, &c., at prices agreed upon. Provide and fix coal-plates, air-bricks, and air-gratings. Provide galvanized iron for composition bath, and fix heating apparatus (either kitchen-boiler or gas, as specified) complete.

11.—**Painter.**—Knot, prime, and properly prepare all woodwork, and paint four coats in oil and the best colour. The woodwork of hall and sitting-rooms to be grained (oak, satin-wood, or maple), and varnished twice with best copal varnish. The dining-room to be painted in such colour as desired, and flatted. The woodwork of all the other rooms to be picked out and relieved to match papers. The outsides of sashes to be grained oak, and twice varnished.

12.—**Paper-hanger and Colourer.**—To whiten all bedroom and staircase ceilings, and distemper the sitting-rooms, picking out the mouldings of cornices when desired. To hang all papers throughout the house at — per piece, one with another, the patterns to be selected and paid for separately.

13.—**Bell-hanger.**—Hang bells to every room but the attic and basement. Those from the sitting-rooms to be hung with wires enclosed in zinc tubes, which are to be fixed ready for the plasterer. All the wires from above to be brought down in zinc tubes properly concealed in the plaster, and the bells to be hung on the bell-board in basement passage. Hang front-door bell, with bronze pull-out. Fix lever pulls to sitting-rooms; to be paid for separately by the employer.

If an architect is employed, this specification is of course unnecessary; and if not, he cannot be appealed to in case of any dispute. Consequently, it is desirable as far as possible to divide the work; and, when it can be agreed upon, to name some third party to whom any dispute can be referred. The whole of the work specified in the above, according to plans (see *figs.* 47 to 49, including *frontispiece*), can be executed at prices varying from £1200 to £1800. This range provides for fluctuations in the prices of materials, such as bricks, lime, &c., &c., which make a great difference in the outlay; and also for the difference in the cost of chimney-pieces, grates, bath, &c., in which items alone £100 or £150 may easily be added to the lower sum mentioned. I am, however, inclined to think that no one could build such a house without having had considerable experience in all the mysteries connected with joiners, and other journeymen, at a less cost than £1500.

Sub-Sect. B.—The Ten-roomed House.

190. In this house, which is intended to afford a much more limited accommodation than that last described, much is sacrificed to economy; but still, for a small family, it may be made very comfortable. The small size of the rooms precludes all large social meetings, though not such as are perhaps most conducive to comfort. The principle of the arrangements is much the same as that already described, the variation being chiefly in point of the number and sizes of rooms. This is the ordinary style of London houses in inferior streets, which let at an average of about £55 a-year, the rent rising and falling according to the situation. Such a house, built pretty substantially with neat internal fittings, will cost in London from £800 to £1000; but in many cases where an inferior class of material is allowed to be used, £600 have covered the cost. Here, however, the staircase must be of a common description, narrow, and dog-legged.

Sub-Sect. C.—The Four and Six-roomed Houses.

191. These houses are calculated for persons having an income of from £100 to £200 a-year, and they are composed simply of a basement-ground and first-floor, in each of which are two rooms, or sometimes as follows, namely—of a basement consisting of a kitchen and scullery, while the other floors are entirely occupied by one or two rooms and the staircase. They are seldom ornamented in any way externally, though in some few cases, of late years, such an attempt has been made by means of stucco and cement, covering very inferior brick-work, and only resulting in premature decay. It is seldom, however, that a plot of ground can be obtained to build one of these houses by itself, and therefore, it is quite useless to attempt any description of them. Indeed, as I have before remarked, it is very seldom the case in towns, that a house can be built with advantage to the occupier; and when such is the case, it is only in a superior style, when a plot

of ground sometimes presents itself. In smaller houses, the ground which can be afforded is so limited, that it must in all probability be part of an estate; still this does sometimes offer itself at a fair price, and then it may be advantageously seized upon, and a house put up for about £50 per room, more or less according to circumstances. In this estimate the rooms are calculated at about 14 feet by 12, and 9 feet high, and the stairs of the commonest dog-legged construction. Supposing this to be the case, and the ground rent or interest of money sunk in the ground to be £2 to £5, then a house with six rooms ought to be obtained in this way for a rental of from £15 to £20, which is very little below the current rate, and therefore scarcely worth the investment.

SECT. 5.—PLANS OF HOUSES IN THE COUNTRY.

192. I have already remarked, that country-houses differ in many essential points from those which are built in close proximity to one another, in consequence of the scarcity of ground in towns and cities. In the country, again, there are other varieties, as, for instance, the suburban villa, a species of hybrid between the two, the regular country-house, the cottage, and the farm-house. The consideration of each of these must now be entered upon, though it will be impossible here to examine them all at full length.

SUB-SECT. A.—THE SUBURBAN VILLA.

193. This may now be advantageously described, as coming next to its near relative the town-house, inasmuch as it presents characteristics in common with it, as, for instance, its underground kitchen. At first sight it appears extraordinary that this arrangement should prevail so generally in situations where there is room enough to provide these offices above ground; but there are really two reasons for it, one being that those who live in the close neighbourhood of towns prize so highly their modicum of garden, that they refuse to part with any of it for kitchen or other office; and the second being that the servants are all broken in to this underground mode of life, and if they do not object, their mistresses will not do so for them. It is quite true that a little patch of garden is a great amusement in many cases to masters and mistresses, and that the abstraction of two or three squares of it would wofully diminish its extent, and this reason is therefore a sound one; but whether so or not, such is the custom, not only in the neighbourhood of London, but of Birmingham, Manchester, Liverpool, and Glasgow; and consequently there is no other course open to me but to describe things as I find them, unless good cause for alteration can here be shown. *Fig.* 53 A and B show a section and ground plan of one of the least expensive of these houses, arranged on a most economical scale, so as to leave very little room in the passages or staircase. The door is at the side, and these houses are usually built in pairs, but sometimes in rows, when the two side entrances are brought out to the level of the front, without any room over them. When the door is thus brought out, a very little additional walling is sufficient to enlarge the drawing-room by the width of the passage, which is a great boon to social people, and to those who like the airiness of a room 21 feet long instead of the dimensions which are shown in plan, *fig.* 53 B. In this case a trussed girder must be thrown across the opening to carry the wall above, but the extra expense will rarely exceed £20 altogether. The following is an actual bill of quantities for such a house, but the contract price is rather above what it would now cost, and a good manager would probably put up two such houses for little more than £1500.

BILL OF QUANTITIES OF A TEN-ROOMED SUBURBAN HOUSE,

Built in 1858, near London.

	yds.	ft.	in.
Cube moiety of digging and wheeling	765	0	0
Concrete	80	0	0
BRICKLAYER.			
	rds.	ft.	in.
Reduced brickwork	18	77	0
Super half-brick trimmers ...	0	46	4
Ditto, best malm facings ...	0	708	2
Ditto, gauged arches	0	69	1
Run one-brick cuttings ...	0	206	6
Ditto, quarter-brick sailing ...	0	41	6
Super. circular cutting ...	0	12	4
Run 14-inch barrel drain, half-brick rim	0	14	0
No 1, hole for coal-plate ...	0	60	0
CARPENTER.	sqr.	ft.	in.
Super. labour and nails to framed naked floors ...	20	0	0
Ditto, on oak-sleepers	4	86	0
Ditto, to lean-to roof	3	0	0
Ditto to ceiling floor	2	85	0
Ditto, framed and beaded partitions	10	0	0
Ditto, trussed ditto	1	77	0
Ditto, batten to walls ...	½	0	0
Cube Memel fir floors, partitions, &c., ...	2	558	0
Ditto, in bond and plates ...	0	76	2

100

	sqr.	ft.	in.
Super. inch rough boarding on flap	2	46	0
Run rough turnings to trimmers	0	58	6
Ditto turning-pieces to gauged arches	0	28	8
Ditto, cornice for gutter ...	0	29	0
Two semi-circular centres to rough arches, 5 feet 6 inches diameter		—	

JOINER.

	sqr.	ft.	in.
Super. 2½-inch two-cut batten folding floor	6	17	0
Ditto inch yellow deal on ditto	2	70	0
Ditto ditto on oak sleepers ...	0	10	0
Ditto 1¼-inch yellow ditto, straight floor	4	85	0
Ditto inch white straight joint batten floor	3	90	0
Ditto half-inch tongued and square linings	0	49	7
Super. ¾-inch square skirting	0	57	6
Ditto inch torus ditto	0	64	0
Ditto ditto beaded lining ...	0	82	0
Ditto ditto square skirting ...	0	98	0
Ditto ditto reeded ditto ...	0	28	0
Ditto ditto rebated plinth ...	0	127	6
Ditto ditto two side shelves ...	0	23	4
Ditto ditto proper ledged door	0	16	5
Ditto ditto tongued and rounded lining	0	72	10
Ditto ditto double rebated and beaded jambs	0	54	0
Ditto ditto framed door grounds	0	150	6
Ditto ditto square framing ...	0	70	2
Ditto ditto two-panel square window backs	0	48	4
Ditto ditto moulded backs and elbows	0	94	6
Ditto ditto bead butt and square back flaps	0	63	0
Ditto ditto bead butt back linings	0	75	0
Ditto 1¼-inch proper boxings	0	67	8
Ditto inch ditto	0	9	8
Ditto ditto moulded and bead butt boxing shutters ...	0	20	8
Ditto ditto bead flush and square shutters and hanging stiles	0	18	4
Ditto 1¼-inch moulded and splayed backs, elbows and soffits	0	73	8
Ditto inch ditto	0	25	6
Ditto ditto plain columns glued and blocked	0	57	0
Ditto ditto wrought one side lining	0	88	4
Ditto ditto double rebated and beaded jambs	0	48	5
Super inch single rebated and fluted pilasters	0	28	6
Ditto 1¼-inch 4-panel square door and framed and beaded closet front	0	71	0
Ditto 1½-inch 4-panel square doors	0	122	4
Ditto inch bead flush and square ditto	0	38	1
Ditto ditto moulded and bead flush ditto	0	17	8
Ditto ditto moulded and bead flush boxing shutters ...	0	121	6
Ditto ditto sash doors, bottom panel beaded	0	15	10
Ditto ditto sash and solid frame on centres	0	2	0
Ditto ditto ovolo sashes double hung in deal-cased frames, oak sunk sills	0	238	6
Ditto ditto square bar ditto, with shifting beads	0	63	8
Ditto 2-inch astragal and hollow French casements ...	0	135	9
Ditto ditto sashes, double hung deal-cased frames, oak-sunk sills	0	28	8
Ditto ditto with circular top rail, and chord bar to meeting rail, double hung, deal-cased frames, oak sunk sills, solid head	0	90	0
Super. 2-inch moulded and bead butt sash door, diminished stiles, and 2-panelled shutters	0	17	4
Ditto ditto 4-panelled double moulded doors	0	87	4
Ditto ditto square framed partition	0	106	1
Ditto ditto wrought, framed, and rebated front to closet	0	9	5
Ditto 2½-inch sash door, hung folding, bottom panel reed flush, two-panel belection, moulded shutters	0	38	0
Ditto inch step, risers, and carriage housed to close string	0	107	9
Ditto ditto steps, risers, and carriage, with moulded nosings mitred to cut string, and dovetailed for balusters	0	178	0
Ditto ditto framed and beaded close string	0	7	6
Ditto ditto wall string ...	0	22	6
Ditto 1¼-inch plain outside string	0	6	6
Ditto inch wall string ...	0	9	9
Ditto ditto reeded ditto ...	0	35	2
Ditto ditto sunk and beaded cut string, moulded and sunk	0	84	0

	sqr.	ft.	in.
Super. inch sunk circular cut string, &c.	0	6	0
Ditto ditto deal seats, risers, and bearers	0	8	9
Ditto ditto mortise clamped flap and beaded frame ...	0	5	5
Ditto Honduras mahogany seat, riser and bearers ...	0	11	1
Ditto ditto mortise, clamped flap, and beaded frame with moulded nosing	0	5	10
Ditto ¾-inch square mahogany plinth	0	4	10
Ditto moulding in architrave, &c.	0	241	4
Ditto circular ditto	0	9	8
Cube proper fir French casement frames	0	7	11
Ditto ditto door-case	0	5	4
Oak sill to ditto	0	3	8
Run borders to slabs	0	17	0
Ditto narrow skirting	0	55	2
Ditto narrow beaded capping	0	52	8
Ditto rounded planceer ...	0	18	0
Ditto grooved skirting grounds	0	145	0
Ditto labour to rule joint ...	0	24	0
Ditto inch quirk ogee and bead	0	337	6
Ditto wrought rounded nosings	0	41	8
Ditto rounded door stop ...	0	31	6
Ditto angle staff	0	130	4
Ditto return bead	0	20	0
Ditto fluting in pilaster ...	0	60	0
Ditto wood shutter bar ...	0	4	2
Ditto square bar balusters ...	0	345	6

	yds.	ft.	in.
Run 2½-inch framed newel ...	0	33	6
Ditto deal moulded hand-rail	0	21	0
Ditto ramp in ditto	0	1	6
Ditto Spanish mahogany moulded hand-rail	0	36	0
Ditto circular and ramped do.	0	7	0
No. 1—scroll in ditto	—		

No. 2—Ionic caps to columns, 2 turned bases to ditto; 2 moulded and mitred caps and bases to pilasters; 1 mahogany box and shelf; 1 hole in mahogany seat in 1 ditto and beads; 1 hole in deal seat; 1 ditto and beads; 1 curtail end to step and riser; 1½-inch curtail end; 32 return ends to moulded nosings and plain cut brackets mitred to string board; 4 circular ditto and brackets; 35 housings to plain steps; 6 ditto to winders; 33 ditto to moulded nosings; 14 housings to base; 16 elbow caps; 1 deal mitre cap; 5 single turning to newels.

IRONMONGERY.

No. 10—pair of 2½-inch, 16 pair of 3-inch, 1 pair of 3½-inch, and 1 pair 5-inch cast butt hinges and screws; 2 pair 5-inch brass projecting ditto; 7 pair 1½-inch back flap hinges and screws; 1 pair 18-inch cross garnets; 12 pair 2½-inch brass butts; 3 cupboard locks; 9 6-inch brass knob locks; 1 8-inch dead lock; 1 10-inch best draw-back lock; 3 6-inch mortise locks; 5 brass mortise latches; 2 9-inch, and 2 10-inch barrel bolts; 1 12-inch and 8 7-inch flush bolts and screws; 8 shutter bars; 1 iron newel; 12 iron balusters; 2 sash centres; 2 Norfolk thumb-latches; 2 stubbs and plates; 2 thumb screws; 6 buttons, and No. 1 coal-plate chain, &c.

PLASTERER.	yds.	ft.	in.
Super. lath, plaster, set ceilings and partitions	213	0	0
Ditto lath, plaster, float, and set	144	0	0
Ditto lath, float, and stucco ditto	30	0	0
Ditto lath and lay one coat ...	18	0	0
Ditto render set walls ...	192	½	0
Ditto render, float, set ditto ...	45	0	0
Ditto render, float, and stucco ditto	40	0	0
Ditto 2 coats whiten to new work	234	0	0
Ditto 2 coats colouring to walls	159	0	0
Ditto plain face jointed and coloured	141	0	0
Ditto compo moulded cornice	0	102	0
Ditto plain plaster cornice ...	0	201	4
Run 4-inch compo reveals ...	0	204	8
Ditto 5-inch enrichments in cornice	0	119	0
Ditto plaster quirk	0	86	
No. 1½—pair of moulded and mitred caps and bases to pilasters in front of house; 52 moulded balusters; 16 extra mitres in plaster cornice; 1 enriched flower, 1 foot 6 inches diameter ...	—		

MASON.

Super. inch York inside hearth	0	15	6
Ditto 2-inch rubbed York mantles and jambs	0	53	3
Ditto 2½-inch York paving ...	0	83	0
Ditto inch Portland mantle jambs and shelf	0	20	9
Ditto 3-inch Portland landing and balcony	0	154	0
Cube Portland stone	0	121	9
Super. plain work on ditto ...	0	258	4
Ditto circular plain ditto ...	0	74	8
Ditto moulded ditto	0	43	7
Ditto 1½-in. veined marble slab	0	12	0
Run Portland coping, weathered and throated, 17 by 3	0	46	6
Ditto ditto 12 by 2½	0	26	9
Ditto York quarry worked sills	0	91	0

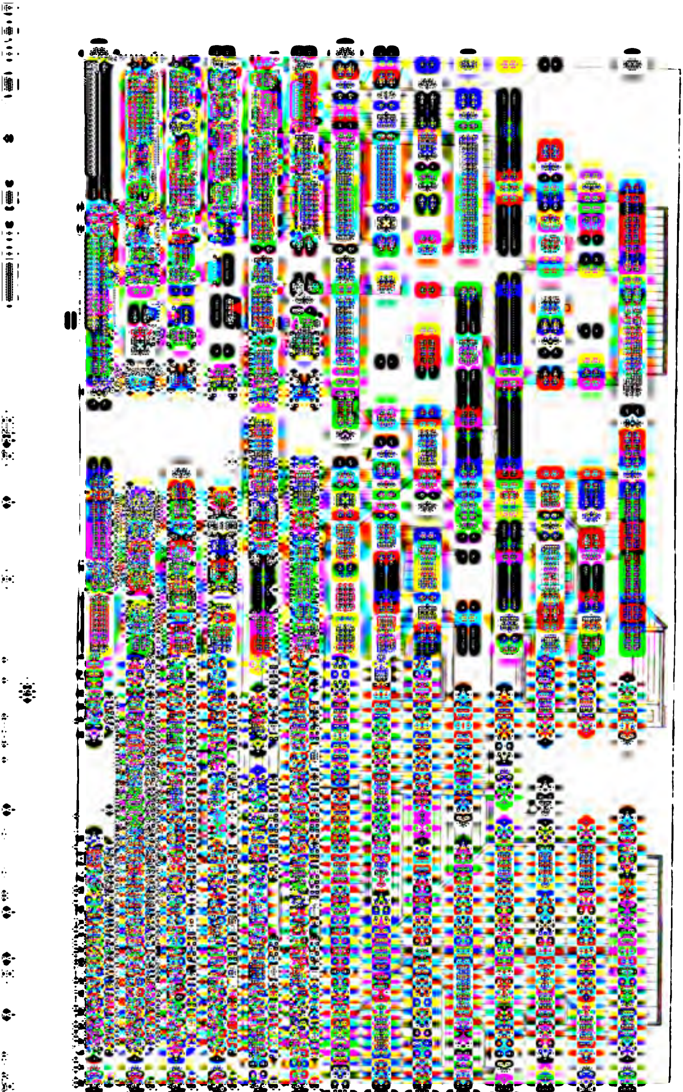

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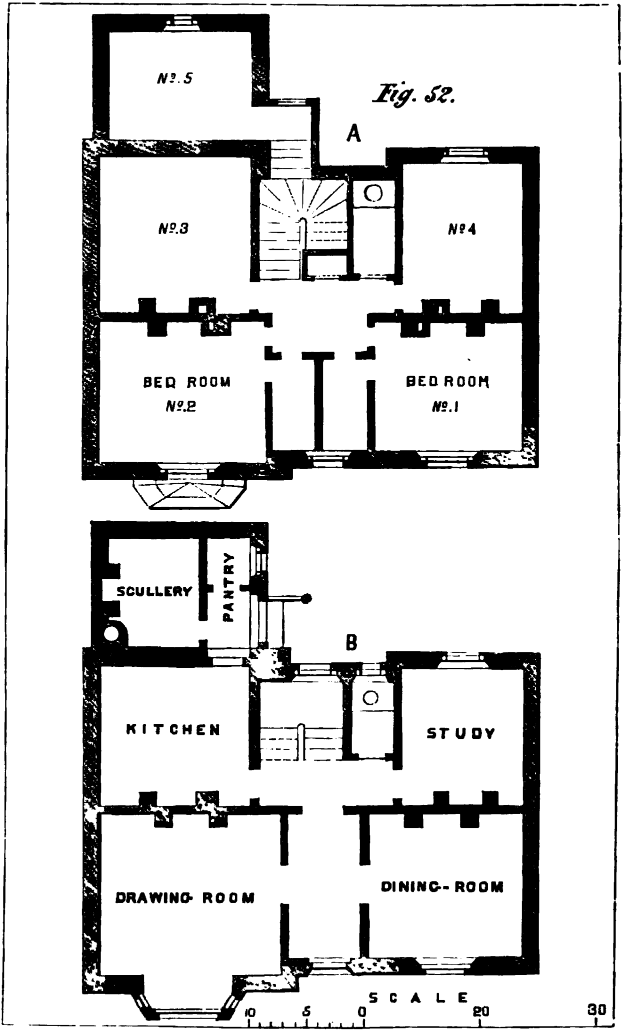
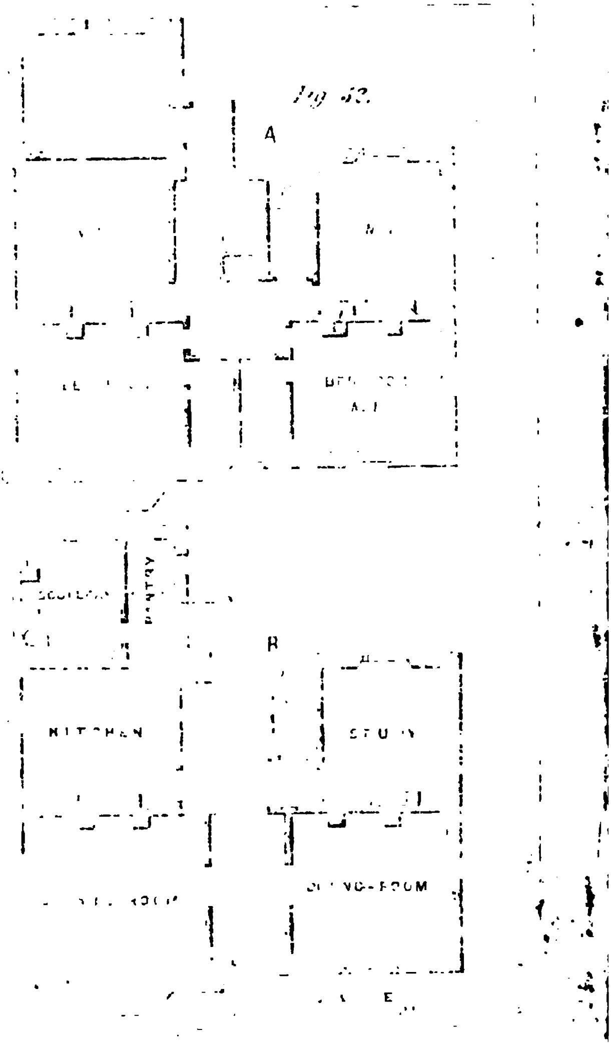
Fig. 52.



(A) CHAMBER, AND (B) GROUND-PLAN, OF COTTAGE. P. 103.

Fig. 52.



[illegible] GROUND PLAN, [illegible] COTTAGE.

P. 163

	yds.	ft.	in.
Run. arris fluting in columns	0	289	0
No. 2.—Portland boxed chimney pieces; 2 statuary marble ditto; 2 veined ditto; 2 moulded caps to columns; 2 moulded caps and bases to pilasters; 1 6-inch York sink; 1 stone for coal-plate.	—		

PLUMBER.

	cwt.	qr.	lbs.
Milled lead in lead flats, flashings, &c.	28	0	0
Run ¾-inch service pipe ...	0	40	0
Ditto inch ditto	0	46	0
Ditto 5-inch soil-pipe	0	28	0
No. 7—6 feet lengths, 2½-inch iron rain-water pipe; 1 head and shoe to ditto; 1 iron pan-frame water-closet with blue and white basin (fixed complete); 1 lead hopper (fixed complete); 2 ⌓ traps, and 1 service box	—		

GLAZIER.

Super. 3rds crown glass in sashes, &c.	0	172	10
Ditto best ditto	0	186	11

PAINTER.

	yds.	ft.	in.
Super. 4 oils common colours	424	0	0
Ditto 3 oils party-coloured and flatted	215	0	0
Ditto 4 oils iron railing ...	15	0	0
Ditto grained mahogany and varnished	0	87	4
Run 4 oils skirting	0	228	9
Ditto 4 oils narrow ditto ...	0	238	8
Ditto skirting to stairs ...	0	134	8
Ditto hand-rail, newel and balaster	0	400	0
Ditto compo reveals	0	204	8
No. 35—frames 4 oils; 5 ditto, 3 oils and flat; 16 dozen squares, 14 oils; 4½ dozen, 3 oils and flat; ½ dozen ditto, grained and varnished ...	—		

	piece	ft.	in.
Of damask satin papering ...	15½	0	0
Run gilt moulding inch girth	0	179	6
Total cost	£1,068	0	0

SUB-SECT. B.—THE COUNTRY HOUSE.

194. The annexed plan of a country house is one which is well adapted for the purpose, when the family is not very large; it gives, however, only five bed-rooms, and if more are required they must be built over the kitchen and wash-house. Neither is there any distinct provision made for a laundry, that being much better arranged as an out-office when it is required, as the smell of steam and ironing is not very agreeable to most noses. If more bed-room accommodation still is required, the only plan is to carry up the roof another story, which will just double the number of rooms, but it will materially take off from the external appearance. Still, large families must be accommodated, and by far the easiest mode is to carry up the roof. The house consists of three good sitting-rooms, a tolerably roomy staircase, and five bed-rooms, together with a kitchen and wash-house under a separate roof. (See *figs.* 50 and 51 A, B, C, D, and E.) *Fig.* 50 B shows a ground plan with green-house opening into the drawing-room by two casement windows, and back balcony covered with slate, connecting kitchen with larder and dairy; *fig.* 50 A gives a section through dining-room, front hall, library, and drawing-room; *fig.* 51 D is an elevation of the same; *fig.* 51 C gives the chamber plan; and *fig.* 51 E that of the roof. This house, built of hollow bricks, rough cast, tiled-roof, and cement windows and front door-case, with the above chamber accommodation, may be built in favourable situations for £800. If built with stone and brick in the most substantial manner, it will cost at least £1200; and with stabling and other out-houses, yards, &c., £200 more.

SUB-SECT. C.—THE COTTAGE.

195. COTTAGES are built in a numberless variety of forms and sizes, from the *cottage ornée*, adapted for an extensive establishment, to the humble habitation of the farm labourer. That which I am now considering is intended for the man who lives in the country upon his £150 to £200 a-year, and should consist of two sitting-rooms and four or six bed-rooms, with a school-room or nursery down stairs. *Fig.* 52 A and B show such ground and chamber plan, to suit which the elevation may easily be arranged. This should cost about from £400 to £500, but it may *possibly* be put up with cheap materials in some parts of the country for even less than that. The stairs would, of course, be narrow, and of the dog-legged construction; and, indeed, all the materials should be of the economical order. The bow-window adds slightly to the expense, but when it can be afforded, it makes a room so much more cheerful in the country that I should always recommend its adoption. Such a cottage as this is well adapted for rough cast, and will look exceedingly well with wooden casings to the windows, and hollow bricks covered with the above surface. A projecting roof will throw the wet well off, and will keep the walls dry and healthy. Smaller cottages

than this will more properly come under the section describing the houses for the labouring classes, where a plan will be given suited to them. It is unnecessary to say that these plans might be extended to any number, but the above comprise the leading features of the chief varieties of houses suited to each kind of proprietor. External ornament will be infinitely varied, but I believe in internal arrangements, some one or other of those which I have given will be likely to suit the taste or circumstances of most of those comprised within the limits I have set. It is true, that a man with £100 a-year to spend will not be able to afford a ten-roomed house, but that which will suit him is so very simple and so like those described under the dwellings of the labouring classes, that it will not be necessary further to allude to them.

CHAP. V.

WARMING AND VENTILATION.

SECT. 1.—GENERAL REMARKS.

196. Before proceeding to build it is always desirable to fix upon the methods to be adopted in warming, lighting, ventilating, supplying with water, and draining the intended house; and also the means, if any, for protecting it from fire. Each of these subjects, therefore, will now be considered. It must be evident that the early settlement of these questions will prevent numerous errors, and the chance of subsequent alterations, which greatly add to the expense, and often considerably modify the plan of the building.

SECT. 2.—THEORY OF HEAT.

197. HEAT, or as it is called in scientific language, *caloric*, is a state or condition of bodies, the precise nature of which is not known except by its effects. Thus, if the hand is held against a piece of hot metal, we experience a sensation which we commonly call that of heat; yet very nearly the same is produced by the opposite condition in extreme cold. But for our present purpose it may be sufficient to take heat as evidenced by the thermometer, and assuming that it is a certain condition, we desire to obtain its effects in a manner which this instrument will register for us. It is a law of our nature, that we require our blood to be maintained at its regular and proper standard, usually marked on the thermometer of Fahrenheit at 98 degrees; and in order to effect this in our climate without extra clothing or exercise, and within doors, we must keep our rooms between 55 and 60 degrees, varying according to the weather and the state of health of the individual. Now, there are three modes of doing this: 1st, by chemically producing or developing heat, as by fires, gas, friction, &c.; 2nd, by husbanding the heat evolved by our own bodies, or those of our domestic animals; 3rd, by increasing its ordinary development by exercise or the administration of stimulants. According to modern theory, it is supposed that in a great proportion of cases in nature, heat is evolved as the result of the union of carbon and oxygen, as in our common fires and stoves, in all our artificial lights, and in the production of animal heat. These two agents are therefore essential to our comfort in this respect; and providentially we have an unlimited stock of oxygen constantly provided in the atmospheric air, which contains about a quarter of its weight of that gas. We have, therefore, only to obtain carbon in some shape in order to have what we want, and in addition to take care that it is used economically, and in such a way as not to prejudice our health.

198. THE DEFINITION OF HEAT, then, is that it is a subtle fluid, whose particles repel one another, and are attracted by all other substances. It cannot be weighed, and it has the power, according to its degree of development, of converting certain substances into three different conditions, viz., gases, liquids, and solids, as exemplified in water, which may be either in its usual state of liquidity, or in that of steam, or, again, as a solid in the form of ice.

199. IT EXISTS IN NATURE either in a *free* state or in a state of *combination*. In the former it readily gives the sensation called "heat," and produces expansion in almost all bodies to which it is allowed access. In this state it is measured by the degree of expansion which it causes in mercury, or some other known material, and the instrument is called a *thermometer*. This increase

of bulk is not the same in all bodies, and among our common building materials it varies from lead, which expands 1 inch in 351, to glass or deal, which both require three times that length to increase to the same extent.

200. A TENDENCY TO MAINTAIN AN EQUILIBRIUM is always shown by free caloric—that is to say, all bodies, however differently heated, when exposed to the agency of a conductor, gradually, but surely, arrive at the same degree. But there exists a great diversity in the rapidity with which different substances abstract caloric when in contact with a body in which it has accumulated. Common air, and gases in general, abstract it slowly, while metals, stones, and wood, acquire it more rapidly; the degree of abstraction being generally in proportion to the density of the body, and they are called respectively good and bad conductors of heat.

201. HEAT not only is distributed by conduction, but it also *radiates* freely through space, whether occupied by gases or not; though here, again, upon the density of the gas depends the degree of radiation. When thus radiating, it impinges upon the surface of a solid or liquid substance, its rays are reflected from it if polished, or are absorbed by it if rough. In the former case, the temperature of the body is not increased; while, in the latter, it is. These facts should be known, as they influence us considerably in the selection of our materials for different purposes connected with heat. It has been found by experiment, that a cubical tin vessel containing hot water produced in a thermometer, by radiation, the following results; according to the coating which it received, thus—

When coated with		Thermometer marked,	
Lamp black ...	...	100	Fahrenheit.
Isinglass ...	...	75	"
Tarnished lead	...	45	"
Polished iron ...	...	15	"
Ditto tin ...	...	12	"
Ditto gold ...	...	12	"
Ditto silver	...	12	"

From this it results, that when we desire to radiate heat we should blacken our stoves and pipes; again, when we wish to reflect its rays, we should polish our steel plates: and lastly, if we wish to retain heat in any vessel, we should take care that its surface is highly polished, as, for instance, our teapots and coffeepots.

202. COMBINED CALORIC does not indicate itself by the thermometer, or to our sensations, but is, as it were, dormant. Thus, when a solid passes to a fluid state, it renders a certain portion of its heat dormant, as in the thawing of water, in which the thermometer marks a lower temperature immediately the conversion takes place, and much more quickly than can be accounted for in any other way; hence the danger of strewing salt on our flagstones. On the other hand, when the density of bodies is increased either by chemical or mechanical means, dormant caloric is evolved, as in mingling cold sulphuric acid and water, or in hammering iron, or in converting liquids into solids, or gases into liquids; during all of which processes heat is given out. A pound of water condensed from steam will render 100 pounds of water at 50 degrees warmer by 11 degrees than before; whereas the same quantity of boiling water will raise only 13·12 pounds to that temperature.

203. THE SOURCES OF CALORIC are—1st, the sun's rays; 2nd, combustion; 3rd, percussion; 4th, friction; 5th, the mixture of certain chemicals; and 6th, electricity.

204. COMBUSTION, or burning, as practised in our houses, is the union of carbon or hydrogen, or both, with the oxygen of our atmosphere, in such a way as to evolve heat and light. It is necessary before this union will take place that a part of the fuel should be raised to a high temperature, immediately after which a decomposition takes place, and the elements become differently arranged. Thus, we will suppose a piece of wood to be raised to a red heat by contact with some burning body. Now, wood is composed of carbon, hydrogen, and oxygen, and the heat applied immediately converts part of the wood into these gases, which take fire readily, in the form of carburetted hydrogen gas uniting with the oxygen of the atmosphere, and burning exactly like our common coal gas—with a flame. The remainder is partly converted into steam, mixed with pyroligneous acid, which passes off into the atmosphere in a transparent form, and partly into carbonic acid gas, which rises upwards from its expansion by heat, and more or less mixed with imperfectly decomposed carbon in the form of smoke. Coal burns much in the same way, except that it contains more carbon in proportion to its bulk, and gives out more smoke in consequence. It also is liable to contain sulphur and earthy matter, the former of which passes off in the shape of sulphuretted hydrogen, while the latter remains in the form of ashes, more or less deprived of all carbonaceous matter. Carbonic acid gas, which is well known to be highly injurious, and, when inhaled in sufficient quantities, fatal to animal life, is the ordinary result of this union of carbon with oxygen; and it is from this agent collecting in wells and vats that so many fatal accidents occur in them. It is supposed

by many people that its greater weight prevents its mixing with the air we breathe, and that it lies in a definite stratum at the bottom of our rooms. No doubt this is the case if carbonic acid gas is poured into a vessel containing air of *the same temperature;* but when the former is considerably heated, as is always the case from combustion, it mixes rapidly and uniformly with the air of the room, and then is quickly inhaled with a fatal result. If it were not for this fact our rooms, in these days of gas burning, would be much more injurious to children than they are, because the results of the combustion would lie below the level of our mouths, and nearer those of our children, especially those on the floor, and would be sometimes fatal to them. But let any one ascend a ladder, and place his mouth near the ceiling of a room in which gas has been burnt for some hours, and he will find that he can scarcely breathe, whilst at a lower level he feels little or no inconvenience. The fact is, that the heated carbonic acid gas and air together are lighter than the surrounding cooler atmosphere, and continue to remain so until cooled by contact with surrounding objects, or by gradual mixture with cold air. As far as possible, however, we ought to provide for the exclusion of this injurious gas from our rooms; but so long as we burn moveable artificial lights in the air of our rooms, without any precautions to insure the removal of the gaseous emanations, we shall experience more or less of the evil. Gas is much more capable of being burnt without injuring the air of the room than candles or oil lamps, because our gas-burners are almost always fixtures, whilst they are constantly being carried about. It is quite true, that the quantity of gas commonly burnt gives out more carbonic acid than a pair of candles, but if only gas enough to give the light of two candles is used, it will neither give out more heat nor carbonic acid than the candles themselves. This part of the subject, however, will be better considered when we come to describe the peculiarities of gas itself. It is quite needless to enter upon the injurious qualities of the results of combustion; they are recognised by all as highly prejudicial to health, and it may be taken for granted that we ought, as far as possible, in warming our rooms, to provide for their escape. In small quantities they may not cause fatal consequences; and, under certain circumstances, the production of heat, although accompanied by the escape of its results, is better than no heat at all. In some countries, where fuel is scarce, advantage is taken of the heat evolved by domestic animals, and the house is partly occupied by members of the human family, and partly by horses, bullocks, sheep, swine, or dogs. Here, as in the case of fires without chimneys, the air is considerably vitiated, and much harm is done, though it certainly would appear that in dry cold climates, the effect of carbonic acid upon the system is not so injurious as in warmer latitudes. The same applies to carbonaceous matters, such as train oil, ardent spirits, &c., which are consumed in the Arctic regions in quantities which would be out of the question at the Equator. In England, however, we universally adopt the plan of producing heat in our houses by means of combustion in some shape, and we endeavour at the same time to prevent its escape by using non-conducting materials as far as is practicable. It may here be remarked, that the effects of heat upon various bodies are marked by expansion in every direction, but in different proportions, according to the material, and that the transmission of heat from body to body varies also in the same manner.

SECT. 2.—VARIETIES OF FUEL.

205. WOOD is the fuel which is almost invariably offered to man, though it is wholly absent in the icy regions of the north, where the oil obtained from the seal, or other inhabitant of the deep, is the sole artificial supporter of heat. In Great Britain this fuel is now almost entirely supplanted by coal, except in those thickly wooded districts at a distance from the canal and the railway, where the one material is so easily procured, and the other can only be obtained by long and expensive land-carriage over common roads. It makes a very cheerful fire, and for the purposes of cooking is quite equal, if not superior, to coal; inasmuch as it may be made to give out any amount of heat, without risk of smoking;—and for heating ovens, nothing equals wood. Like all other fuels, wood consists of carbon, hydrogen, and oxygen, together with a small quantity of earthy and metallic matters which remain in the shape of ashes. Wood should always be well dried before burning, as, otherwise, a great part of its heat-producing power is lost in converting its water into steam. The utility of wood for producing heat is in proportion to its weight, and hence the heavy woods of this country are the best, including the oak, ash, beech, apple, pear, birch, and elm. The lighter woods, and especially the fir tribe, make a more cheerful blaze, but they rapidly burn away and are consumed. Fagots, composed of the branches of trees and the underwood of plantations tied up into bundles, are chiefly employed for heating ovens and for lighting fires; but for the latter purpose, in our

cation, the foreign woods of the fir tribe are now more commonly used, with or without the addition of resinous matter to make them light more readily. Nothing is much cheaper than the patent fire-lighter, consisting of a small open circle of fir-wood tied together and dipped in melted resin. These cost one farthing a-piece, and as one serves to light a fire, the expense can scarcely be an object when compared with most other materials. As the price of wood fluctuates so much in different localities, it is impossible to give even an approximate estimate here that would be of the slightest service; and as it is always sold by measure, and not by weight, it can scarcely be compared with coal, which is now everywhere sold by the latter method. It may, however, generally be calculated, that coal will give as much heat and last as long as twice its weight of wood; but this can only be considered as a rude approximation to the truth, because both kinds of fuel vary so much in heat-producing power. The above conclusion is founded upon a comparison made between the root of the oak, which is the part most commonly used for fires, and the average quality of Staffordshire coal.

206. CHARCOAL consists of wood partially burnt in closed chambers, by which the hydrogen and oxygen have been driven off, and the carbon with the earthy matter alone remain. It is made by arranging a number of branches of trees in an upright position, with small interstices between them to act as flues for the admission of air; a large number of these being thus collected, the sides and the greater part of the top are covered with sods of turf, and these again with earth, leaving some of the flues open. The whole is then lighted and suffered to burn slowly for a fortnight, or until it ceases to give off anything in the shape of smoke, the extent of the combustion being regulated by increasing or diminishing the number and size of the apertures. When the charcoal burners think that the heap is properly burnt they close all the openings, and the fire goes out for want of air, and gradually the heat is given off to the surrounding earth; after which the heap is opened, and the charcoal is fit for use. It burns by uniting with the oxygen of the air, giving off, without any smoke, nearly pure carbonic acid gas, which, from its freedom from this disagreeable adjunct, is peculiarly liable to occasion injurious and sometimes fatal results, as it is readily inhaled without pain or annoyance. It soon causes a drowsiness, which goes on to a fatal degree of coma, ending in death, if continued long enough. Hence, charcoal should always be used with great caution in rooms inhabited for any length of time, unless it is burnt in a stove with a proper flue to carry off the carbonic acid gas; and hence the danger of all chafing-dishes and stoves without flues, as the "Vesta," "Junk," and "Joyce's;" for although these may be so arranged as to give off as little carbonic acid as is consistent with the production of heat, still they must evolve it in considerable quantities, and consequently must do some amount of harm. In this country, however, it is little used, except for the more delicate kinds of cookery, where a very clear fire without smoke is required.

207. PEAT comes next in point of antiquity of use, and also as being a product offered to the use of man on the surface of the earth. It is a vegetable growth which has been accumulating for many ages, and is still going on, consisting of fibres and leaves matted into a compact mass, and sometimes almost resembling a soft kind of coal in the closeness of the texture, though never assuming the crystallized form which that material presents. In Ireland and Scotland, and in some parts of England, peat bogs or mosses are met with covering a large area, and affording the only species of fuel which is procurable, and there it is burnt by all classes. But from choice no one would use it, as it is not so pleasant and cheerful as wood, nor so capable of producing heat as coal.

208. CHARRED PEAT is sometimes used, being in that state a tolerably pure carbon, and deprived of its empyreumatic smell which is so disagreeable to those who are not accustomed to it. It is easily charred by merely burning it till red hot, and then stifling it by covering it with any substance impervious to air and incapable of being burnt, as earthen pots or bricks, &c. When thus charred, it readily takes fire spontaneously if collected in large heaps, and therefore it should be only prepared in small quantities at a time.

209. COAL is found in various districts, in a great variety of qualities, extending from the cannel coal, which burns like a candle, to the anthracite, which gives neither flame nor smoke, and closely resembles charcoal in its mode of union with oxygen. *Newcastle* coal is generally considered the most valuable, and the best qualities of it are decidedly superior to all others in their powers of producing and sustaining heat, without making any dust, and leaving a very small residue. This kind of coal cakes into a solid mass, which soon becomes impervious to air, and hence, without constant stirring, the fire is apt to go out. But with the occasional use of the poker, which most people enjoy, a good and cheerful fire is readily maintained. For use in the bedroom, therefore, this species of coal is not so

well adapted, as it is very difficult to keep it long burning without attention. *Yorkshire* now affords a large supply of useful coal to the midland and southern districts of England, and even in London its *Silkstone* coal is rapidly becoming valued as it deserves. This coal nearly resembles the best varieties of *Staffordshire* hard coal, being a cheerful burner without much ash, though leaving more than the Newcastle kinds. It will not burn so long as that variety, and requires nearly as much stirring, though it does not cake. In this respect the Staffordshire coal is superior, as all its varieties have the property of burning out without stirring, and indeed will never improve by being broken up. The *Brooch* coal of Staffordshire and Shropshire is a very light and spongy coal, burning very rapidly and cheerfully, and without leaving much ash. It however burns out so quickly that it is very extravagant, though for small fires it is admirably adapted, as it will burn to the very last fragment, and hence is highly valued by the poor. The *Derbyshire* and *Forest of Dean* coal fluctuate so much in value, according to the particular colliery, that little more can be said of them. I have seen some of each sort which was pretty good, but other specimens were of very inferior quality. *Anthracite*, which is chiefly found in South Wales, is a kind of coal which is only suited to stoves, not being composed of hydrogen in sufficient quantity to burn without a great body of heat, and refusing therefore to unite with oxygen in an open grate. For hall stoves it is well adapted, and when it can be readily obtained it is economically used in them, or for cooking in closed ranges. Coal is now sold by the ton in all parts of England, and the price varies in proportion to the distance from the coal-field, and the means of carriage.

210. Coke is to coal what charcoal is to wood, being deprived of its hydrogen and oxygen, and having only remaining a part of its carbon, mixed with a large proportion of earthy matter. As now sold for domestic use, it is almost always the residue remaining after the preparation of gas, but a large quantity is prepared expressly for the use of railway locomotives, and for smelting iron. It is generally sold by measure, and when added on the top of a good coal fire it gives out a great heat, and lasts a long time. It is also used in closed stoves without coal, but it will not burn by itself in open grates.

211. Coal Gas is now extensively used for the purpose of producing heat, and under certain circumstances it is perhaps more advantageous than any other fuel. At first sight it would appear, that, in point of economy, there must be a loss in preparing gas from a material by an elaborate process, which may be readily used in its original state in our ordinary grates. But it must be remembered, that in our common methods of burning coal, a large proportion of the heat is wasted in various ways—as by the escape up the chimney of imperfectly burnt carbon, and by the necessity which exists of wasting much fuel in "making up" the fire previously to its being fit for culinary purposes, as well as of keeping it up to the full pitch to the last moment. With gas, on the other hand, it is not lighted till it is wanted, and it is put out directly after it ceases to be useful. It is also burnt in such a kind of chamber that very little heat escapes up the flue; and thus, though it is quite true that a shilling's worth of coal will go farther in producing heat than the same money laid out in gas, yet by actual trial it is found that cooking by gas *may* be carried on at about the same cost as that by coal; but to do this the gas must be used with economy, and it must be turned off directly it is no longer wanted. It is extraordinary how small a jet of gas will heat a volume of water; and for boiling, stewing, or perhaps baking, it is certainly very economical; but for roasting, air must be admitted in large quantities, occasioning a great loss of heat up the flue, and it is in this operation that the greatest waste of gas occurs. Still, on the whole, I believe that cooking by gas is economical, and when the saving of time and trouble, as well as dirt is an object, it will amply repay the cost of its introduction. As the price of gas ought to bear a relative proportion to that of coal, it might be assumed that if it answers in one locality it will do so in another, but as this is not always the case, it is necessary to take this fact into consideration. A large proportion of the expense of making gas is borne by the machinery, which is as necessary for a small consumption as for a large one; and, therefore, it will be found that in large cities gas is always relatively cheaper than in small towns, and thus while coal is sold at a high price in London, gas is as cheap as in many towns close upon the coal fields. In all cases it is sold by the cubic foot, the price being calculated at per 1000 feet, and this is now almost invariably estimated by a meter through which the gas for each consumer passes, and is thereby registered. These meters are of two kinds, the water-meter and the dry-meter, but both consist of revolving chambers of a fixed capacity, each of which receives a cubic foot of gas and discharges it as it revolves—the number of revolutions being measured by ordinary clock-work, and

registered by hands and dial-plates. In London, 7000 feet of gas may be obtained for the average price of a ton of Newcastle coal, and this is a very fair rate, inasmuch as that quantity of coal will only produce about 10,000 feet of gas, leaving the value of 3000 feet, together with that of the coke, to repay the cost of machinery and distribution. Hence it follows, that gas may here, if anywhere, be used with advantage for heating purposes, since the economy of fuel may fairly be set against the loss of three-tenths of the gas; though in this calculation the loss of the coke must also be considered, and as its heat-producing powers are very great, it appears in theory to be opposed to all the principles of economy, until the details of the management are carefully investigated, when the absence of waste may perhaps be set against the higher price of the heating material. On the other hand, when the price of a ton of coal will only purchase 3000 or 4000 feet of gas, there can be no question of its failure to effect what the demands of economy will require; and as in many places gas is 6s. 6d. or 7s. per 1000 feet, while coal is at 15s. or 16s. per ton, the above remarks will draw attention to the necessity of instituting this comparison. It may, I believe, be laid down as a rule, that unless gas can be obtained at the rate of at least 6000 feet for the price of a ton of the best coal, it will not be economical as a fuel for cooking purposes.

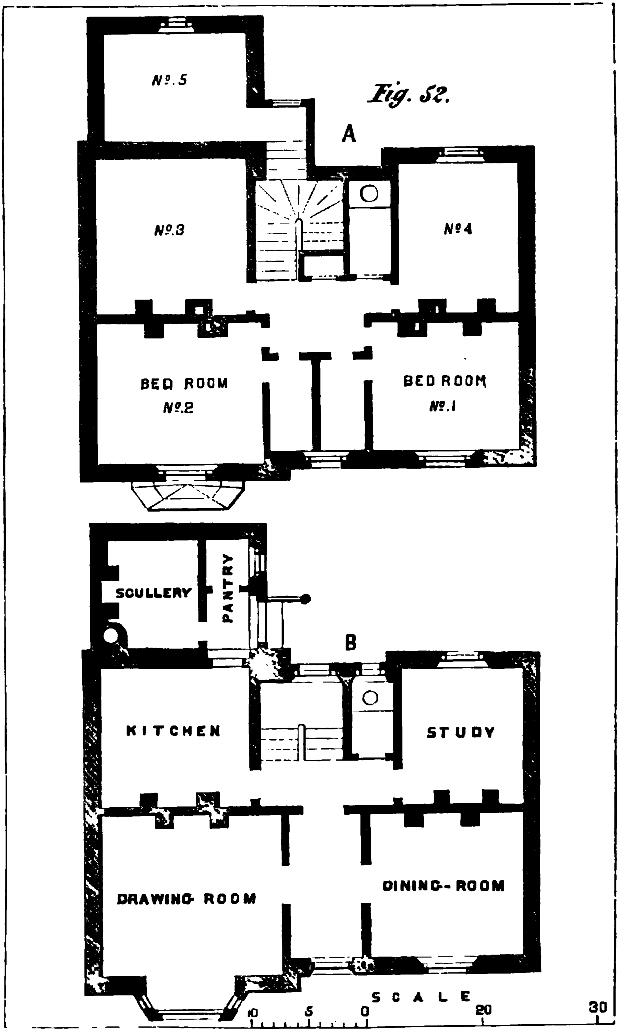
212. LIQUIDS of various kinds, as oil, spirits of wine, turpentine, naphtha, &c., are used for certain heating purposes in cookery, but they are never employed economically, and only as exceptional cases. Alcohol is the best fuel of this kind, though its cost is against its use; but as it burns without smoke or residuum, it is unattended with the objections which forbid the use of oil, naphtha, and the animal fats. There are many beautiful applications of alcohol to the rapid heating of small quantities of water, &c., which will hereafter come under consideration in the sections treating of kitchen, nursery, and sick-room utensils.

SECT. 4.—APPARATUS EMPLOYED IN WARMING.

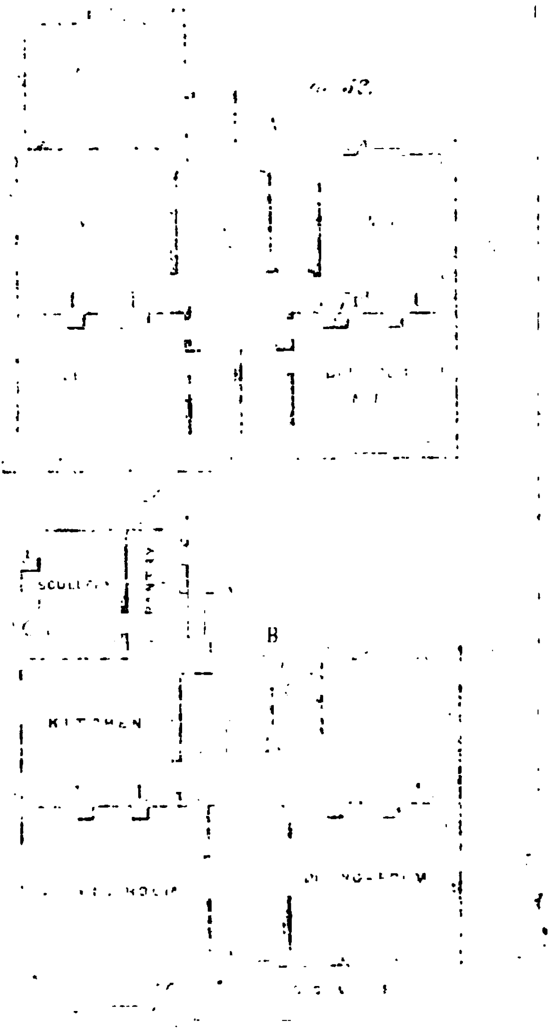
213. IN WARMING OUR HOUSES, combustion of fuel is either immediately effected in the apartment to be warmed, or else by means of tubes containing hot air or hot water, the heat generated at a distance is conveyed to the room. Hence it will be convenient to consider the various modes of warming under the heads of—1st, open grates; 2nd, open stoves; 3rd, closed stoves; 4th, heated air conveyed from the back of the grate, or from another room; 5th, hot water pipes; and 6th, gas stoves.

214. BY OPEN GRATES, we understand any kind of open fire-place which is contained within and behind the surface of a wall, in contradistinction to stoves of all kinds which project more or less from its face. It is a subject of frequent remark, that people complain of cold in an apartment maintained at a temperature of sixty degrees by the introduction of warmed air, while no fault is found if the room has an open fire, although the temperature may be four or five degrees lower. The principal objections to the open fire-place as ordinarily constructed are, the large expenditure of fuel in proportion to the effect produced, and the difficulty of warming an apartment equally and effectually. According to Dr. Franklin, not more than a fiftieth part of the heat generated was rendered available for warming apartments when he resided in England (1725); somewhat later (1798), the loss was estimated by Count Rumford at fourteen-fifteenths; and recently by Dr. Arnott at seven-eighths of the whole quantity consumed. The heat which escapes in the smoke is computed at more than one-half; the loss by the warmed air of the room constantly entering the chimney above the fire is said to be two-eighths, and one-eighth of the fuel is supposed to pass away unburnt in the smoke. In reference to the unequal heating at different distances from the fire, it is observed that the effect of radiant heat is inversely as the squares of the distances; so that the walls of an apartment are scarcely heated, and therefore reflect no heat on persons in the room, who, if they sit at a distance from the fire, are too cold, and if near it, are too warm. More serious causes of objection are the cold draughts created by the air rushing in through the crevices of the doors and windows, and playing upon the backs of persons sitting round the fire; or forming a cold bath several inches in depth on the floor, in which their feet are constantly immersed. Another objection, but hardly a just one, is bad ventilation. That the usual mode of ventilating a room by the air escaping from it up the chimney is not the most perfect, may be admitted, but it is at least a tolerably efficient method, and infinitely superior to that afforded by the thermometer stove, or any of the varieties of Russian, German, American, and Swedish stoves; being objectionable rather on account of certain contingent disadvantages than of its inefficiency. Various forms are adopted for this purpose, and fashion is constantly changing them, as far as the detail of parts is concerned, but in principle little or no improvement has been made of late years, if we except

Fig. 52.



(A) CHAMBER, AND (B) GROUND-PLAN, OF COTTAGE. P. 103.



[illegible] GROUND PLAN, [illegible]

	yds.	ft.	in.
Run. arris fluting in columns	0	239	6
No. 2.—Portland boxed chimney pieces; 2 statuary marble ditto; 2 veined ditto; 2 moulded caps to columns; 2 moulded caps and bases to pilasters; 1 6-inch York sink; 1 stone for coal-plate.		—	
PLUMBER.			
	cwt.	qr.	lbs.
Milled lead in lead flats, flashings, &c.	28	0	0
Run ¾-inch service pipe ...	0	40	0
Ditto inch ditto	0	46	0
Ditto 5-inch soil-pipe	0	23	0
No. 7—6 feet lengths, 2½-inch iron rain-water pipe; 1 head and shoe to ditto; 1 iron pan-frame water-closet with blue and white basin (fixed complete); 1 lead hopper (fixed complete); 2 ⌓ traps, and 1 service box		—	
GLAZIER.			
Super. 3rds crown glass in sashes, &c.	0	172	10
Ditto best ditto	0	156	11
PAINTER.			
	yds.	ft.	in.
Super. 4 oils common colours	424	0	0
Ditto 3 oils party-coloured and flatted	215	0	0
Ditto 4 oils iron railing ...	15	0	0
Ditto grained mahogany and varnished	0	87	4
Run 4 oils skirting	0	298	9
Ditto 4 oils narrow ditto ...	0	238	8
Ditto skirting to stairs ...	0	134	3
Ditto hand-rail, newel and baluster	0	400	0
Ditto compo reveals	0	204	8
No. 35—frames 4 oils; 5 ditto, 3 oils and flat; 16 dozen squares, 14 oils; 4½ dozen, 3 oils and flat; ½ dozen ditto, grained and varnished ...		—	
	piece	ft.	in.
Of damask satin papering ...	15½	0	0
Run gilt moulding inch girth	0	179	6
Total cost	£1,063	0	0

SUB-SECT. B.—THE COUNTRY HOUSE.

194. The annexed plan of a country house is one which is well adapted for the purpose, when the family is not very large; it gives, however, only five bed-rooms, and if more are required they must be built over the kitchen and wash-house. Neither is there any distinct provision made for a laundry, that being much better arranged as an out-office when it is required, as the smell of steam and ironing is not very agreeable to most noses. If more bed-room accommodation still is required, the only plan is to carry up the roof another story, which will just double the number of rooms, but it will materially take off from the external appearance. Still, large families must be accommodated, and by far the easiest mode is to carry up the roof. The house consists of three good sitting-rooms, a tolerably roomy staircase, and five bed-rooms, together with a kitchen and wash-house under a separate roof. (See *figs.* 50 and 51 A, B, C, D, and E.) *Fig.* 50 B shows a ground plan with green-house opening into the drawing-room by two casement windows, and back balcony covered with slate, connecting kitchen with larder and dairy; *fig.* 50 A gives a section through dining-room, front hall, library, and drawing-room; *fig.* 51 D is an elevation of the same; *fig.* 51 C gives the chamber plan; and *fig.* 51 E that of the roof. This house, built of hollow bricks, rough cast, tiled-roof, and cement windows and front door-case, with the above chamber accommodation, may be built in favourable situations for £800. If built with stone and brick in the most substantial manner, it will cost at least £1200; and with stabling and other out-houses, yards, &c., £200 more.

SUB-SECT. C.—THE COTTAGE.

195. COTTAGES are built in a numberless variety of forms and sizes, from the *cottage ornée*, adapted for an extensive establishment, to the humble habitation of the farm labourer. That which I am now considering is intended for the man who lives in the country upon his £150 to £200 a-year, and should consist of two sitting-rooms and four or six bed-rooms, with a school-room or nursery down stairs. *Fig.* 52 A and B show such ground and chamber plan, to suit which the elevation may easily be arranged. This should cost about from £400 to £500, but it may *possibly* be put up with cheap materials in some parts of the country for even less than that. The stairs would, of course, be narrow, and of the dog-legged construction; and, indeed, all the materials should be of the economical order. The bow-window adds slightly to the expense, but when it can be afforded, it makes a room so much more cheerful in the country that I should always recommend its adoption. Such a cottage as this is well adapted for rough cast, and will look exceedingly well with wooden casings to the windows, and hollow bricks covered with the above surface. A projecting roof will throw the wet well off, and will keep the walls dry and healthy. Smaller cottages

than this will more properly come under the section describing the houses for the labouring classes, where a plan will be given suited to them. It is unnecessary to say that these plans might be extended to any number, but the above comprise the leading features of the chief varieties of houses suited to each kind of proprietor. External ornament will be infinitely varied, but I believe in internal arrangements, some one or other of those which I have given will be likely to suit the taste or circumstances of most of those comprised within the limits I have set. It is true, that a man with £100 a-year to spend will not be able to afford a ten-roomed house, but that which will suit him is so very simple and so like those described under the dwellings of the labouring classes, that it will not be necessary further to allude to them.

CHAP. V.

WARMING AND VENTILATION.

SECT. 1.—GENERAL REMARKS.

196. Before proceeding to build it is always desirable to fix upon the methods to be adopted in warming, lighting, ventilating, supplying with water, and draining the intended house; and also the means, if any, for protecting it from fire. Each of these subjects, therefore, will now be considered. It must be evident that the early settlement of these questions will prevent numerous errors, and the chance of subsequent alterations, which greatly add to the expense, and often considerably modify the plan of the building.

SECT. 2.—THEORY OF HEAT.

197. HEAT, or as it is called in scientific language, *caloric*, is a state or condition of bodies, the precise nature of which is not known except by its effects. Thus, if the hand is held against a piece of hot metal, we experience a sensation which we commonly call that of heat; yet very nearly the same is produced by the opposite condition in extreme cold. But for our present purpose it may be sufficient to take heat as evidenced by the thermometer, and assuming that it is a certain condition, we desire to obtain its effects in a manner which this instrument will register for us. It is a law of our nature, that we require our blood to be maintained at its regular and proper standard, usually marked on the thermometer of Fahrenheit at 98 degrees; and in order to effect this in our climate without extra clothing or exercise, and within doors, we must keep our rooms between 55 and 60 degrees, varying according to the weather and the state of health of the individual. Now, there are three modes of doing this: 1st, by chemically producing or developing heat, as by fires, gas, friction, &c.; 2nd, by husbanding the heat evolved by our own bodies, or those of our domestic animals; 3rd, by increasing its ordinary development by exercise or the administration of stimulants. According to modern theory, it is supposed that in a great proportion of cases in nature, heat is evolved as the result of the union of carbon and oxygen, as in our common fires and stoves, in all our artificial lights, and in the production of animal heat. Those two agents are therefore essential to our comfort in this respect; and providentially we have an unlimited stock of oxygen constantly provided in the atmospheric air, which contains about a quarter of its weight of that gas. We have, therefore, only to obtain carbon in some shape in order to have what we want, and in addition to take care that it is used economically, and in such a way as not to prejudice our health.

198. THE DEFINITION OF HEAT, then, is that it is a subtle fluid, whose particles repel one another, and are attracted by all other substances. It cannot be weighed, and it has the power, according to its degree of development, of converting certain substances into three different conditions, viz., gases, liquids, and solids, as exemplified in water, which may be either in its usual state of liquidity, or in that of steam, or, again, as a solid in the form of ice.

199. IT EXISTS IN NATURE either in a *free* state or in a state of *combination*. In the former it readily gives the sensation called "heat," and produces expansion in almost all bodies to which it is allowed access. In this state it is measured by the degree of expansion which it causes in mercury, or some other known material, and the instrument is called a *thermometer*. This increase

of bulk is not the same in all bodies, and among our common building materials it varies from lead, which expands 1 inch in 350, to glass or deal, which both require three times that length to increase to the same extent.

200. A Tendency to maintain an Equilibrium is always shown by free caloric—that is to say, all bodies, however differently heated, when exposed to the agency of a conductor, gradually, but surely, arrive at the same degree. But there exists a great diversity in the rapidity with which different substances abstract caloric when in contact with a body in which it has accumulated. Common air, and gases in general, abstract it slowly, while metals, stones, and wood, acquire it more rapidly; the degree of abstraction being generally in proportion to the density of the body, and they are called respectively good and bad conductors of heat.

201. Heat not only is distributed by conduction, but it also *radiates* freely through space, whether occupied by gases or not; though here, again, upon the density of the gas depends the degree of radiation. When thus radiating, it impinges upon the surface of a solid or liquid substance, its rays are reflected from it if polished, or are absorbed by it if rough. In the former case, the temperature of the body is not increased; while, in the latter, it is. These facts should be known, as they influence us considerably in the selection of our materials for different purposes connected with heat. It has been found by experiment, that a cubical tin vessel containing hot water produced in a thermometer, by radiation, the following results; according to the coating which it received, thus—

When coated with		Thermometer marked,	
Lamp black ...	...	100	Fahrenheit.
Isinglass ...	...	75	"
Tarnished lead	...	45	"
Polished iron ...	...	15	"
Ditto tin ...	...	12	"
Ditto gold ...	...	12	"
Ditto silver	...	12	"

From this it results, that when we desire to radiate heat we should blacken our stoves and pipes; again, when we wish to reflect its rays, we should polish our steel plates; and lastly, if we wish to retain heat in any vessel, we should take care that its surface is highly polished, as, for instance, our teapots and coffeepots.

202. Combined Caloric does not indicate itself by the thermometer, or to our sensations, but is, as it were, dormant. Thus, when a solid passes to a fluid state, it renders a certain portion of its heat dormant, as in the thawing of water, in which the thermometer marks a lower temperature immediately the conversion takes place, and much more quickly than can be accounted for in any other way; hence the danger of strewing salt on our flagstones. On the other hand, when the density of bodies is increased either by chemical or mechanical means, dormant caloric is evolved, as in mingling cold sulphuric acid and water, or in hammering iron, or in converting liquids into solids, or gases into liquids; during all of which processes heat is given out. A pound of water condensed from steam will render 100 pounds of water at 50 degrees warmer by 11 degrees than before; whereas the same quantity of boiling water will raise only 18·12 pounds to that temperature.

203. The Sources of Caloric are—1st, the sun's rays; 2nd, combustion; 3rd, percussion; 4th, friction; 5th, the mixture of certain chemicals; and 6th, electricity.

204. Combustion, or burning, as practised in our houses, is the union of carbon or hydrogen, or both, with the oxygen of our atmosphere, in such a way as to evolve heat and light. It is necessary before this union will take place that a part of the fuel should be raised to a high temperature, immediately after which a decomposition takes place, and the elements become differently arranged. Thus, we will suppose a piece of wood to be raised to a red heat by contact with some burning body. Now, wood is composed of carbon, hydrogen, and oxygen, and the heat applied immediately converts part of the wood into these gases, which take fire readily, in the form of carburetted hydrogen gas uniting with the oxygen of the atmosphere, and burning exactly like our common coal gas—with a flame. The remainder is partly converted into steam, mixed with pyroligneous acid, which passes off into the atmosphere in a transparent form, and partly into carbonic acid gas, which rises upwards from its expansion by heat, and more or less mixed with imperfectly decomposed carbon in the form of smoke. Coal burns much in the same way, except that it contains more carbon in proportion to its bulk, and gives out more smoke in consequence. It also is liable to contain sulphur and earthy matter, the former of which passes off in the shape of sulphuretted hydrogen, while the latter remains in the form of ashes, more or less deprived of all carbonaceous matter. Carbonic acid gas, which is well known to be highly injurious, and, when inhaled in sufficient quantities, fatal to animal life, is the ordinary result of this union of carbon with oxygen; and it is from this agent collecting in wells and vats that so many fatal accidents occur in them. It is supposed

the various rooms, and a continuous supply of tempered air might thus be provided to maintain salutary ventilation, to supply the requisite quantity of air to the fires, and to afford an increased degree of warmth. Chimney openings have not generally a sufficient depth to receive grates of the most efficient kind. The practice of making the breasts project into the room, and the necessity for restricting the projection to the smallest limit, have led to the modern custom of making the recess of the chimney opening only a brick and a half in depth. If all the flues were built in the party-wall, no chimney breast would be required above a projection of a brick, or half a brick, at the fire-place itself, which might be concealed by, or form part of, the chimney-piece. Where fire-places are situated in an external wall, the difficulty of providing a supply of air is not felt, as a hole may generally be made directly through the wall at the back; but as in town-houses they are generally formed in the party-walls, independent flues must be brought up for the purpose by the side of the chimney breasts, and openings cut through the jambs. Where there are several stories it would be difficult to supply air to the upper rooms, as the smoke-flues from the lower rooms would generally interfere between the air-flues and the fire-place. In some cases an air-flue might be formed in the floor by using the space between two joists in connexion with a grating in the outer wall, and carrying an iron pipe three or four inches in diameter under the hearth through the trimmer and trimmer-arch into the space behind the fire-place. This arrangement, however, requires the trimmer-joists to be strengthened, and in London the Building Act might probably prevent it, while the supply of air so obtained would be less than is desirable. It is, however, possible in most cases to make some arrangements for the supply of air; but it would be preferable that adequate provision should be made in all new houses, either by air-flues in the party-walls or by other modes which will suggest themselves to the architect."

223. By means of HOT WATER, also, rooms or whole houses may be warmed; but the apparatus is very expensive, and being liable to leak or burst it is not either safe or desirable. The principle is very applicable to hot-houses, because there a leak is easily discovered, and as the pipe is in sight it is as readily mended; but as in our rooms these must be concealed, there is a constant fear of injury to walls, paper-hangings, &c., from the escape of water or steam. When it is determined to heat in this way, it is only necessary to introduce a certain number of double pipes round the room beneath the skirting-board, and to circulate hot water through them by means of the same principle as has been already described in the section treating of hot-baths (par. 153). It is, however, by no means an economical mode of imparting heat, because there is a great loss of this in the upper cistern, unless that reservoir of water is required for any other purpose.

224. GAS STOVES are now becoming very generally introduced as a means of heating halls, shops, &c.; and, I am told, economically, though I am rather incredulous on this score. Numberless forms are offered to the public, but all of them are radically the same, the gas being simply burnt in an iron chamber, and the results being either suffered to escape into the apartment, or else carried off in the ordinary way by a flue. To the former mode there is a great objection, inasmuch as the products are injurious if respired, and though incapable of causing great injury in an open shop, yet in a dwelling-house they ought never to be allowed to escape. A small tube may always be arranged for this purpose, and as there is no danger of fire, it may be carried even through wooden partitions in perfect safety, if not in contact with them. A very ingenious form of gas stove was introduced some years ago by Mr. Edwards, in which gas is burnt by passing it in a number of small jets through a cone of porcelain, which soon becomes red hot, and radiates heat very rapidly. It is, I believe, the best gas stove yet invented, but its high prime cost will always militate against its general introduction.

SECT. 5.—GENERAL PRINCIPLES OF VENTILATION.

225. Fresh air is a necessary of life, and without its admission, neither respiration in our bodies, nor combustion in our grates and stoves can be efficiently performed. There is a great similarity in these two processes, both requiring a large supply of oxygen, and both occasioning a rise of temperature, though in different degrees. It is proved by direct experiment, that we cannot live without fresh air, and though a wonderfully small addition will support life, yet it will not maintain a high state of health. Under the old arrangement of doors and windows, there was no necessity for providing for our supply of air, because the crevices were so large that the difficulty consisted in knowing how to bear up against its cooling effects. But as art advanced its steps, and joiners became more careful in their fittings, this mode of supply became less and less, until at last it results that our fires will scarcely burn with all the doors

and windows shut. When this is the case it is high time to provide a means of admitting fresh air, because it is clear that the human body will not be able to carry on respiration properly in an atmosphere which will not supply oxygen enough for a common fire. Hence it is that we now hear such an outcry for ventilation, which is moreover doubly needed from the greater perfection of our oil and gas lamps. In former days we were contented with a couple of candles, which consumed a very limited quantity of oxygen, but now we must have one, two, or three oil or gas lamps, which are equal to fifteen or twenty such candles, and consequently consume ten times the volume of oxygen, so that we may calculate that what with our larger fires and our stronger lights, we require at least twelve times as much oxygen, independently of respiration, and at the same time cut off its supply to an infinitesimal amount. But it will be said by many, that it is not true that the doors and windows of the present day close up their apertures more completely than of yore, and I am ready to admit that in some badly-built houses there is reason for the assertion, and in them there is little necessity for additional means of ventilation. Yet, taking the general run of houses, it will be allowed that their fittings now-a-days are very much more perfect than was formerly the case; and where they are properly made there is a real necessity for extra care. In many rooms where there are two fire-places, and the doors and windows are shut, the admission of air is so completely cut off that one fire overpowers the other, and brings its smoke and even the flame out into the room. Such is a frequent and open proof of the want of ventilation, and a practical argument against the theoretical assertion that it is impossible to ventilate by procuring air from above. The ordinary means of ventilating mines also disproves this assertion, as the air in them must be obtained from the surface of the earth, and often descends to a great depth without any actual pumping, though in the deepest mines some kind of machinery is always required. The grand principle of ventilation, as practised in our houses, is to make use of our warming apparatus for changing the air, and to do this with as little inconvenience to our bodies as possible. In this there is no difficulty as far as the getting rid of the spoiled air is concerned, but in the admission of the fresh air greater care is required, inasmuch as it is usually colder than that contained in the room, and is therefore liable to chill any part of the body upon which it impinges in any perceptible stream, producing what is called "a draught." Our forefathers were not so particular in this respect, and from constant habit were accustomed to changes of temperature, and to draughts even of a worse description than those which are now complained of. Among the old lattice windows an opening may frequently be seen which will admit the end of the little finger, and of course of a considerable stream of cold air in the winter season. Such a crevice would cause a perfect consternation if met with in a modern bed-room or drawing-room, and is a thing quite unheard of.

226. From these remarks it may be gathered that it is necessary in constructing all habitable rooms to provide, in the first place, proper air tubes for carrying off the spoiled air which is the result of combustion and respiration; and, in the second place, to take care that a corresponding quantity of fresh air is admitted without producing a draught.

SECT. 6.—PRACTICAL APPLICATION OF THESE PRINCIPLES.

227. Numerous devices have been planned by ingenious men for ventilating large as well as small houses, and the nation has had to pay a pretty considerable bill for these experimental researches. In order to avoid the danger arising from a draught of cold air, the attempt was made by Dr. Reid to pump warm air in at the top of the room, and draw out the spoiled air at the bottom, through numerous small apertures, and in theory this is a very pretty arrangement. But, unfortunately in practice, it is found that the air comes in without that freshness which is so desirable; and also, that instead of gradually displacing the foul air, it passes directly downwards and out of the lower apertures, leaving the spoiled air stagnant in the room. It is very difficult to heat air to such a temperature as to bear removal through long tubes, without at the same time burning it and rendering it unfit for respiration, and hence one great difficulty in the plan; but the greatest is that experienced in driving out the foul air. This material seems to be very obstinate, and to be more easily led than driven, so that Dr. Reid was obliged to draw it out by means of an enormous chimney, in which a large fire was kept burning, and thus constantly creating a draught. But even with this adjunct the plan failed, though it has never yet been satisfactorily explained how, or why, since it is clear from other experiments elsewhere, that when expense is no object, a room may be effectually ventilated upon this plan. One of the most absurd devices for ventilating our rooms was ushered into notice

with great pomp some years ago, and called the air-syphon. This was to do wonders, and to draw off all the foul air without any trouble; but its promoters forgot that in this there is no difficulty, and that the real pinch lies in the mode of its introduction. This air-syphon is, however, a fallacy, since it is entirely inoperative, and is no more a syphon than is a tube of the ordinary syphon form *when wholly immersed in water*. We will suppose such a tube perfectly capable of emptying any vessel in the ordinary way, one leg being immersed as usual, and the other in the air. Here are two fluids, air and water, and in this case, as soon as the water is drawn into the long leg, it has a tendency to flow out, because of its greater specific gravity than the air into which it runs. But now immerse the whole apparatus (syphon and vessel) in a large tub of water, and the flow ceases at once, because the specific gravity of the whole being the same, there is no tendency to run in any direction. Exactly such is the air-syphon, which was supposed to act in drawing the air upwards by the air in its longer leg overbalancing that in its shorter one, and thus causing a draught upwards. But if there were any tendency in the air contained in the longer leg to rise, it would do so without the shorter one, just as a tube inserted in the bottom of a cask of water allows that fluid to escape downwards—and the syphon is only necessary where a perforation is not desirable. As I said before, however, there is no difficulty in providing for the removal of foul air, because it fortunately happens that, both by respiration and combustion, it is raised in temperature, and is therefore rendered specifically lighter than the pure air of the room. It is only necessary to open an outlet for it to escape, and it effects its own deliverance, provided it is allowed to do this before it has had time to cool. It was supposed by some theorists that carbonic acid gas, being heavier than atmospheric air, and being also the chief result of respiration and combustion, it would by its greater weight fall at once to the ground, and always lie in a definite stratum on our floors. Here, however, the influence of heat and the tendency of all gases to mix together were entirely overlooked, and consequently this false theory was obliged to be corrected by the actual results of experiment, which show that if we only open a flue leading into the outer air in such a situation as to carry off the foul air *before it cools*, and with such a provision that no regurgitation can take place, the ventilation of the room is fully and efficiently performed. It is true, that if we could find any gas lighter than air which would keep separate from it for any length of time, we might construct a trap on the same principle as the water-trap, but inverted, and thus permit the escape of the foul air without allowing its return; but as we have no such gas, we must be content to use the means which we have at our disposal, and these consist chiefly of two—1st, the taking advantage of the strong current produced by our fires in the flues which take off their results; and, 2nd, after making an opening into the flue, placing a balanced valve there which will immediately close on the slightest regurgitation. Such an instrument is Dr. Arnott's valve, which consists of a box of iron capable of being firmly bedded in the brickwork, so as to allow the escape of the upper stratum of foul air into the flue of the room. This box has an aperture in it, guarded with a valve which opens inwards, and is exactly balanced by a small lever and weight, acting with the greatest delicacy. (See *fig.* 54 B.) In all flues which have no tendency to smoke, these valves are quite sufficient to carry off the foul air from the upper part of the room, the fire-place itself acting as the chief ventilator of all that part below the level of the mantel-shelf. If we have, in addition, a gas burner or burners, it is desirable to provide also for them by placing a tube with its mouth opening immediately above the gas burner, and carry this tube into the outer air between the floor and the ceiling, carefully guarding it from the force of the wind by a valve outside; but even this is scarcely necessary when Dr. Arnott's valve is placed in the chimney flue, as by its means a perfect ventilation will be effected. Nevertheless, to make assurance doubly sure, the gas tube should be inserted, as it will act whenever the gas is lighted without the fire; as, for instance, in the summer months.

228. The above is the most effectual and simple provision for carrying off the products of respiration and combustion, we must now consider the best mode of introducing fresh air into the room. I have already remarked, that in well-built modern houses, our doors and windows are so closely fitted, that little air is admitted through them, and that some other means must be adopted for its introduction. I have also shown that it is important to affect this in such a way as to avoid a stream of cold air falling upon the tenants of the room. To meet this problem numerous devices have been suggested, such as apertures covered with perforated zinc, &c., &c.; and Mr. Bardwell has recommended an opening to be made under our windows, guarded with

several layers of permeable substances, so as to break the draught. The following is his direction:—"Take out two courses of bricks to a length of two feet at the bottom of a room, beneath a window, as the most convenient place, and insert therein a zinc, iron, or wooden box, the size of the opening, fitted on the outside with a plate of perforated zinc, another plate with still smaller perforations being placed about two inches behind this; at another two-inch distance place a thickness of coarse hair cloth; next, at a third two-inch distance place a layer of fine hair-cloth; lastly, cut a hole of the same dimensions as that in the walls in the skirting-board, and fit it with a flap or door, and you have the means of admitting fresh air into a room in a manner almost imperceptible to the sense of feeling, because of the exceedingly minute divisions into which the air is broken." This appears to me a very elaborate piece of machinery to effect what may be easily accomplished by the old-fashioned plan, a modification of which has been lately introduced under the name of Sheringham's valve (see *fig.* 54 C). By Mr. Bardwell's plan cold air is admitted on a level with the person, and however broken it will still chill it, even though there is no positive stream from without. This is well shown in the case of large windows where they are actually air-tight; they still, in cold weather, give the sensation of a draught from the large cooling surface which they present. Let any person place himself, on a cold day, between a large window and a fire, and he will find one side warmed and the other chilled, as if by a draught, although the window and frame may be papered up carefully with paste and paper. But fix a double window and the effect ceases, because there is no longer any cooling of the internal layer of glass in consequence of the fixed stratum of air (a bad conductor) between the two windows. If, then, an air-tight window cools, how much more will an aperture, admitting cold air fresh from the exterior, and without any provision for its being warmed. I am quite sure that any one at all liable to be chilled, will take exception to this mode. The same gentleman, however, advocates a plan which is highly useful, and which I have tried with great success. "A four or six-inch stoneware pipe is led from the outside of the house to a chamber behind the fire-grate. The back of the grate should be composed of fire-clay rather than of iron. A second pipe conducts the heated air from the chamber to the interior of the room. A constant supply of fresh, warm, air is incessantly pouring in, and dispelling the vitiated air which is forced out at the exit pipe. This is, in fact, the natural system of ventilation; and the room of an invalid purified on this principle, would become a paradise, which in the absence of organic disease, would speedily restore him to convalescence. All other principles of ventilation are mere trifling toys, fit only for the laboratory or the lecture-room, and certain to be ineffective in practice." In these remarks I can most cordially join, having tried the plan on numerous occasions in the rooms of invalids. But there is a most important point to be attended to which Mr. Bardwell has entirely overlooked, or indeed, which he seems to consider unnecessary. This is the placing a guard upon the aperture which admits the air, to direct its stream upwards against the ceiling. If this is neglected a draught must be felt whenever there is a body of cold air admitted in a horizontal direction upon the body, and I am satisfied that in cold weather it is very difficult at all times so to warm the air as to prevent this injurious effect. The fire will get low at times, and then the draught out of the room being still kept up, or a strong cold wind blowing upon the ventilator, a quantity of cold air, unwarmed by the chamber is admitted, and mischief is at once done. To avoid this, the flue which Mr. Bardwell recommends should be carried up to the ceiling in close proximity to the chimney-flue, so as to absorb *in transitu* as much of its contained heat as possible. When it has reached the ceiling, it should turn off at a right angle under the floor above, and it should then be carried between the joists to some one or more convenient spots, where a valve, such as that already described as Sheringham's valve, should be fixed; and if the mouth of it is covered with fine perforated zinc it will be found a great improvement. I have used this valve for many years in rooms, stables, and kennels, and it acts admirably, directing all the fresh air against the ceiling rather than downwards, and preventing any sensation of a cold draught. It is no modern invention, having been used in our church windows for many years; but the valve alluded to above is very neatly made, and has a pulley and cord for its adjustment to a desired opening, or its total closure. The friction of the air against the sides of a tube is so slight that it matters not how tortuous or how long it may be—only let it open into the pure outer air at one end, and into the room at the other, and, *provided air is removed* by another process, through a different opening, it will readily supply more, as fast as it is wanted. As I said before, the great difficulty lies in this removal, which, however, Dr. Arnott's valve, *fixed in a well-acting flue*, effectually grapples with and overcomes. If, therefore, a room is fitted up with the apparatus shown on one block in *fig.* 54 A, B, and C, the highest degree of warmth will be obtained consistent with good ventilation, and at the lowest possible cost. We have there—1st, Dr. Arnott's smokeless grate (A), providing heat at a low cost, and with little or no trouble in supplying it with fuel; 2nd, the foul air of the room is carried into the flue of this grate by means of Dr. Arnott's valve (B); and 3rd, fresh air is admitted from the outer atmosphere by means of a tube communicating with a fire-brick chamber at the back or side of the grate, and passing up afterwards in close contact with the flue to the level of the ceiling, where it turns off at a right angle under the floor, and opens into the room by means of one or more apertures, guarded by Sheringham's valve (C). An ordinary grate will effect these purposes equally well, but with a greater consumption of fuel. Many grates have been made with iron tubes at the back of them, communicating in a similar way with the external and internal air, and I have myself adopted this plan on several occasions; but the heated iron imparts an unpleasant dryness and smell to the air, and it is not any improvement to the comfort of the room. It is, however, very economical in saving the expenditure of caloric, and when warmth is wanted for a room only occasionally used, it may be economised in this way to advantage. Thus, a fire in one room may be made to heat its own room, and also another at the back by means of these tubes, but in all cases the air passing through them becomes unfitted for long-continued respiration (see par. 227). The same objection not applying to the brick chamber and earthen tubes, it may be readily and advantageously used in all our houses, and I am quite sure it affords the best means of ventilation. Where the expense of this tube and chamber is objected to, the valve alone may be fixed *over* the window, taking care to add the zinc cover to the top of it, and this will serve to supply any moderate-sized room with sufficient fresh air.

229. IN THE SUMMER SEASON the above method of ventilation is wholly inoperative, since there is no fire in the room to produce the draught of air up the chimney, and consequently there is no fresh air drawn in. Hence, arises the necessity for other means of ventilation; and in this country it is found that by providing for a large opening to the outer air by means of the window, the air is changed as fast as is needed. It is seldom that more than this is required in this climate; and consequently no provision is made for the exceptional case, but sometimes in sultry weather when a number of people are collected in one room, or a *suite* of rooms, the air becomes very oppressive, even though all the doors and windows are open. French windows admit twice as much air as sashes; because, in the latter kind, one half only can be opened at one time, whereas, in the French casement, the whole may be thrown open, and nearly one complete side of the room is taken away. Hence it is that these casements are so much used in warm climates, and that they are gradually coming into more general use in this; and when it is found that by the aid of the Espagnolette bolt, they may be made even more air-tight than the sash, they will obtain a still more complete victory over that comparatively clumsy protection. In India, the punka, a species of large fan, is worked backwards and forwards by a servant, and produces a cooling effect; but this is not used here, nor is it likely to be, unless moved by machinery, which would, moreover, be so seldom wanted as to get out of order in the intervals. In manufactories, air is pumped into the rooms by means of revolving fans, similar in principle to the rotary bellows; and this plan might be adopted with advantage in the summer in our houses; but, as I said before, such an adjunct to our luxuries is so seldom required, that it is unnecessary again to allude to it.

230. When CLOSE STOVES are used, ventilation by Arnott's valve is still more needed; and where this is inserted in an aperture leading to the flue of the stove, it will serve to carry off the foul air at the top of the room. But as the draught in these flues is never very great, the valve does not act so freely as in an ordinary flue, and the consequence is that wherever a close stove is employed to raise the temperature of an inhabited apartment, ventilation is very imperfectly carried on. For halls, such a mode of warming answers perfectly, because the air in them, not being vitiated by respiration, is only required to be husbanded for use in the living rooms, and it is warmed to prevent its imparting the feeling of cold when admitted, and also to avoid the chilling of the inmates of the house as they pass from room to room. By means of a stove this is done effectually, and the air not being rendered foul by respiration, is quite fit for that process when admitted to the various rooms. Arnott's valve is not required in halls for this reason, and in the winter season it is only necessary to air the hall thoroughly once or twice a day by opening the doors and windows. This should be done every morning before the fire is lighted, giving a thorough ventilation

to the whole, and admitting the wholesome external air to every part of this central reservoir. If this is done thoroughly once a-day in the winter, and all day long in the summer, the house is kept sweet and wholesome. While this airing is going on the stove is lighting, and by the time it is sufficiently heated to be of any real service the doors and windows may be closed, and the temperature gradually raised so as to be warm enough to avoid a severe chill when the family come out of their rooms. After this the heat gradually rises till the hall is warm enough to afford a supply of air to all the bed-rooms as well as those which are used for other purposes; if this is attended to properly a great saving of fuel is effected, because a much smaller fire will warm a room into which no cold air is admitted, than will be required for one full of draughts from the staircase-hall as well as from without. In all staircases which are only lighted from a skylight there should be a provision for thorough ventilation at the top, if not permanently, yet in the morning at all events. It is not easy to make an opening in a skylight to allow of the escape of air without also admitting the rain; but a valve on the plan already alluded to may always be arranged at the top of the well, and for the summer there ought to be a very large opening at least a yard in diameter, or more if possible. No house can be thoroughly healthy without this, if lighted by a skylight. Where sash staircase windows are introduced, they alone will afford a perfect escape to the air, if opened regularly.

231. In the Basement Story great care should be taken to effect a thorough ventilation, without driving the air upwards into the house. In every case the kitchen should be cut off from the rest of the house by a spring-door fixed carefully in such a way as to be a complete barrier when shut. The less this is opened, the sweeter will the house be when cooking is going on; but if there is a thorough draught of air from the back area to the front, even in town houses where this spring-door must be constantly opened and shut, the communication is so far cut off as to prevent the introduction of the fumes of the dinner before the dinner itself. The great secret in all cases is to arrange a cross current of air on the kitchen side of this spring-door, and to provide that there shall never be a draught through the kitchen blowing upon this door, and when open, through it. A neglect of this precaution is a constant source of annoyance to visitors, who are not always anxious to know on what their hosts are going to dine. A large Arnott's valve helps materially to ventilate the kitchen, and to carry off the smell of cooking, and its introduction should never be neglected; while a Sheringham also aids in the introduction of fresh outer air without a draught.

CHAP. VI.

LIGHTING, NATURAL AND ARTIFICIAL.

Sect. 1.—Principles of Lighting.

232. By the Laws of Nature, the light of the sun is afforded to us in the latitude of Great Britain during a certain portion of the twenty-four hours, varying in length from twenty to nine hours; and in addition we have the reflection of his rays from the moon during the hours of night for nearly half of the time when the sun is below the horizon. But for the purposes of domestic comfort it is necessary to provide for the admission of the sun's rays without the accompaniment of rain, snow, and wind; and besides this, to take care that in his absence a substitute shall be maintained by means of artificial light. Hence, we have to consider the best means of introducing the exact amount of the sun's light which will suit us, unaccompanied by the inconvenient attendants mentioned above; and also the various modes of artificially illuminating our houses. It is unnecessary here to dilate upon the laws of optics, and the composition of the sun's rays; suffice it to observe, that they come in a *straight line* from him to the earth, and that in all cases his primary rays can only fall upon such objects as are not shadowed by any opaque body. In our latitude the sun rises to the north of east in the summer, and sets also to the north of west, so that all openings, except those facing due north at that season of the year, have, during some part of the day, direct rays passing through them, and this is of consequence in deciding

upon the position of windows. Such is all that need be inquired into with regard to the nature of the natural light of the sun, that of the moon being for all domestic purposes quite useless.

233. **The Theory of the Production of Artificial Light** is as follows:—When any solid substance capable of bearing the fire is heated to a certain temperature, it emits light, varying in intensity according to the degree to which it is raised, and in this way the cinders, by the aid of gas in the new stove for the purpose, are made to give the appearance of an ordinary fire. When the heat is raised very high, the colour becomes almost white; and at the highest of all. there is a tint of violet, as in the case of lime placed in the oxy-hydrogen blow-pipe. When these bodies contain a certain portion of carbon, they go on emitting this light until the carbon is exhausted by its union with oxygen and conversion into carbonic acid gas, and this process takes place still more easily when the carbon is already converted into gas before its union with oxygen, by means of hydrogen, which has the power of rendering it gaseous. Carbonic acid gas immediately extinguishes a burning taper, because the oxygen entering into its composition is already surcharged with carbon. Hence it follows that hydrogen must be present in order to produce a flame, for the gaseous product of carbon and oxygen, or carbonic acid gas, will not support combustion, but, on the contrary, extinguishes a light immersed in it. The compounds of hydrogen and carbon are not only very gaseous, but very combustible; and readily uniting with oxygen, either pure or mixed as in atmospheric air, they give off the appearance which we denominate flame. This, therefore, constitutes the difference between *incandescence* and *flame*. In the former case combustion goes on by the union of carbon and oxygen, from which results a gas which is opposed to any further combustion, whilst in the case of flame, hydrogen being present, carbonated hydrogen gas is given off, which, far from being opposed to combustion, is so inflammable as to present the light which we call *flame*. Pure charcoal therefore burns with a bright and vivid glow, unattended by flame, and its fumes at once put out a lighted taper, just as they destroy animal life. But unburnt wood, or tallow, or oil, or spirits of wine—all of which contain hydrogen—give off a gas containing more or less of carbonated hydrogen, and present a flame varying however in intensity of heat and light. It is in this respect that coal and wood differ from coke and charcoal, and hence the two last are incapable of affording a flame.

234. **The Amount of Light** given out by certain materials, or their illuminating power, is the point which chiefly concerns us, and it will be found that there is much difference in this respect in those which are in common use. This subject will more properly be considered under the practical application of these general principles, which forms the third section of this chapter. But it is proper here to ascertain the fact, that the illuminating power does not depend entirely upon the perfection of the union of the gases, but upon the presence of other bodies in addition. Nor does it always correspond with the degree of heat developed, though in the main this will be found to be practically the case in our domestic lights. The light emitted from the purest flame is very feeble, that from hydrogen burning in the air is scarcely visible in the daylight; but if a cloud of dust is raised, as by beating a cushion near it, the presence of the foreign particles immediately renders the flame more apparent. A much more vivid increase of light takes place when a piece of lime is introduced into the burning jet from the oxy-hydrogen blow-pipe, in which the heat is not increased, though the light is indefinitely greater. All flames burning in atmospheric air are hollow, the chemical action being confined to the surface where the two gases meet. The flame of a candle consists of three distinct layers, beginning from the interior—1st, a dark central part, easily made apparent by a piece of wire gauze, and consisting of combustible matter drawn up by the capillary power of the wick, and rendered volatile by the heat; 2nd, of a highly luminous cone, which readily deposits carbon when in contact with a cold body; and, 3rd, there is another cone of feeble illuminating power, but of a high temperature. The reason of these distinct envelopes existing is, that carbon and hydrogen are very unequal in their attraction for oxygen, the latter greatly exceeding the former in this power of combination. Hence, when both are present, and in excess of the supply of oxygen, the hydrogen takes all the oxygen to itself, which it requires, before the union of that element with carbon is permitted. In the case of the candle or lamp, in the outer portion or cone, both the carbon and hydrogen meet with a due proportion of oxygen, and a high temperature is produced with very little light; but in the second cone, the hydrogen absorbs all the oxygen which can reach that part of the flame, leaving the carbon to act as a foreign body, and thus allow of the full illuminating power being evolved. If the proportion is exactly such that the temperature produced outside is high enough to raise the carbon

to a *white* heat, then we have a vivid and white light, without any visible smoke; because the particles of carbon are united with oxygen as soon as they reach the outer circle; but if, on the other hand, the temperature is too low, the carbon is not heated higher than a red-heat, and some of its particles are deposited in the form of smoke, not being heated high enough to combine with oxygen as they emerge from the interior. A jet of coal gas shows these phenomena equally well; and if the gas is previously mixed with air, or if this is forcibly driven into it, the advantage resulting from the above-described imperfect combustion are rendered very manifest. In this case there is sufficient oxygen for the carbon as well as the hydrogen, and both burning together, the power of illumination is almost entirely lost. Hence, it becomes in all cases a matter of nice calculation and mechanical contrivance, to obtain the admission of exactly the proper amount of air, without overdoing it.

235. THE KINDLING POINT at which combustion is carried on without extraneous aid, varies much in the different substances; thus, phosphorus will burn at the temperature of the human body, sulphur at a little above that of boiling water; pure hydrogen may be inflamed by a wire at a red heat, while coal-gas requires a white heat for the purpose. As combustion in these substances ceases when they are lowered beneath the above degrees, it follows that it is only necessary to produce this effect in order to extinguish flames, and hence the power of wire-gauze, which, as in the Davy lamp, puts out the flame entirely, by cooling the gas; from its acting as a perfect conductor of caloric, the combustion ceases during the passage of the gas through its meshes. In the same way, oils are rendered more inflammable by being heated before being submitted to the contact with the wick; and, in other cases, when very inflammable substances are used, as camphine or spirits of wine, it is necessary to guard against the temperature of the reservoir being raised too high, or the material will burn in a body and explode, instead of by a gradual supply. Certain mixtures of air with gases are explosive, when brought into contact with a lighted taper, as in the case of fire-damp and coal-gas, both of which when mixed in certain proportions with air explode with a loud report and great expansive power. It is from this circumstance that the chief danger occurs in the use of gas, though it fortunately happens, that only in one definite proportion will this dangerous result take place, and hence leakages so often occur without it.

SECT. 2.—ECONOMY OF NATURAL LIGHT.

236. As the sun's rays are not now taxed, it may at first sight appear unnecessary to consider the question of the mode of their admittance under economical principles; but when it is discovered by experience that, though the human tax-gatherer makes no call for rates, yet the sun himself levies his toll in the shape of the destruction of furniture, occasioned by his bleaching and warping powers, it will be admitted that it is of great importance to avoid such results. If it were not for this effect, and for the intense heat which would sometimes be developed, it would be perhaps now desirable to make the sides of our rooms entirely of glass. It is ascertained beyond a doubt that the sun's direct rays are invigorating and healthy when not too intense, and hence it is right to admit them as far as is consistent with comfort and the protection of furniture. In all cases there must be a compromise, and there must be such a provision that the sun may either be admitted sufficiently to make the room healthy and cheerful, or else excluded altogether when the room is not inhabited, or his rays are too powerful. But if the whole side of the room is of glass it is difficult to effect the latter object; and as this extension of the transparent material is scarcely at any time necessary, it becomes apparent that the introduction of glass in one-third or one-half of the area of the wall is about the proper quantity. Frequently a quarter of this space in glass is all that is devoted to light, and in open situations facing the south this is sufficient; but in towns, where buildings on the opposite side of the street almost always obstruct many of the sun's rays, one-third is the least which should be allotted. The nearer windows are carried up to the ceiling the more completely is the light admitted; but when cornices and curtains are introduced, it is of no use admitting the light to their backs, only to be spent in fading their colours. It is usual, therefore, in such rooms to leave a space of about a foot between the ceiling and the top of the window, which is occupied by the curtain-rod and fringe. In this country single glass is generally used for the purpose of keeping out the weather, whilst it admits the light; but where a greater protection from the cold is required, as in the case of invalids, a double window should be inserted, which acts as a non-conductor, from its containing between the two layers of glass a stratum of air in a state of quiescence. Except in the case of invalids, in the winter season all windows are made to open as already mentioned in par. 128, and

It now only remains to describe the various blinds by which, when the direct rays of the sun are not desired in the room, they may be excluded, and also at the same time the prying eyes of the over-curious. For this purpose five sets of blinds are employed:—1st, ordinary roller blinds; 2nd, Venetian blinds; 3rd, bonnet blinds; 4th, shutter blinds; and 5th, dwarf blinds.

237. **Roller Blinds** consist of some soft and smooth material, as holland, calico, or tammy, which will fall by its own weight from the roller on which it is wound. There are various modes of rolling this material, some by means of a pulley, top and bottom, worked by a cord; others by a cord suspended from a pulley at the top; and a third set by means of a spring contained within a box at the end of the roller. The most usual and effectual plan for the better kind of windows consists in a roller, the spindle of which works in a box at one end, in such a way that it can be pulled round in either direction by the power of the hand, but it is prevented from rolling easily in one of these ways by means of a spring pressing against a surface of leather, so that the weight of the blind will not overcome it. At the other end is a pulley with a small cord wound round it, filling up its cavity when the blind is rolled up, and in this state it is hung in its place. When therefore the hand applied to the cord winds up the blind, there is no impediment to the action, which goes on smoothly; and on the removal of the hand the blind remains at the desired height. A cord or tassel fixed to the lath in the bottom of the blind easily draws it down again, overcoming the friction of the roller, and in this way the exact amount of protection is always obtained. It may be mounted with either of the materials named above, but holland is that most commonly used. Green tammy is only employed when it is desired to exclude the light more effectually, as in bed-rooms facing the east.

238. **Venetian Blinds** (*fig.* 55 A) consist of a series of laths, varying in width, and of a length sufficient to reach from side to side of the window. Each of these is perforated by two or three oval holes, through which a cord passes attached to the lowest lath, which is much stronger than the rest, and ultimately running over as many pulleys in the topmast lath, also very strong; after which the two or three cords are gathered together and descend to the hand, so that by pulling them all, the whole blind is raised, descending again by its own weight, and retained at any height by fixing the cord. A ladder of loops opposite each of these holes keeps the laths at their proper distances, and another cord attached to the top lath turns them at any angle which may be desired. On the outside of windows Venetian blinds are also fixed (see *fig.*), but from the power which the wind has over them, they are not now much used, their place being supplied by the canvas bonnet blinds.

239. **Bonnet Blinds** (*fig.* 55 B) are made of canvas, and are either mere temporary fixtures, taken down in the winter, or so made as to draw up into boxes, as shown in the illustration alluded to. The latter are far superior in every way, inasmuch as in this climate we have many gloomy days even in summer, when blinds of this description are not desirable; but as their cost is only about one-third of those which draw up, they are sometimes adopted from economical motives; but they will not last more than five or six summers, whereas those securely protected by boxes will remain sound for three times that period. These blinds are now becoming generally used in all situations where the sun has great power, and as they admit plenty of air at the same time, they are much more efficacious than the Venetians.

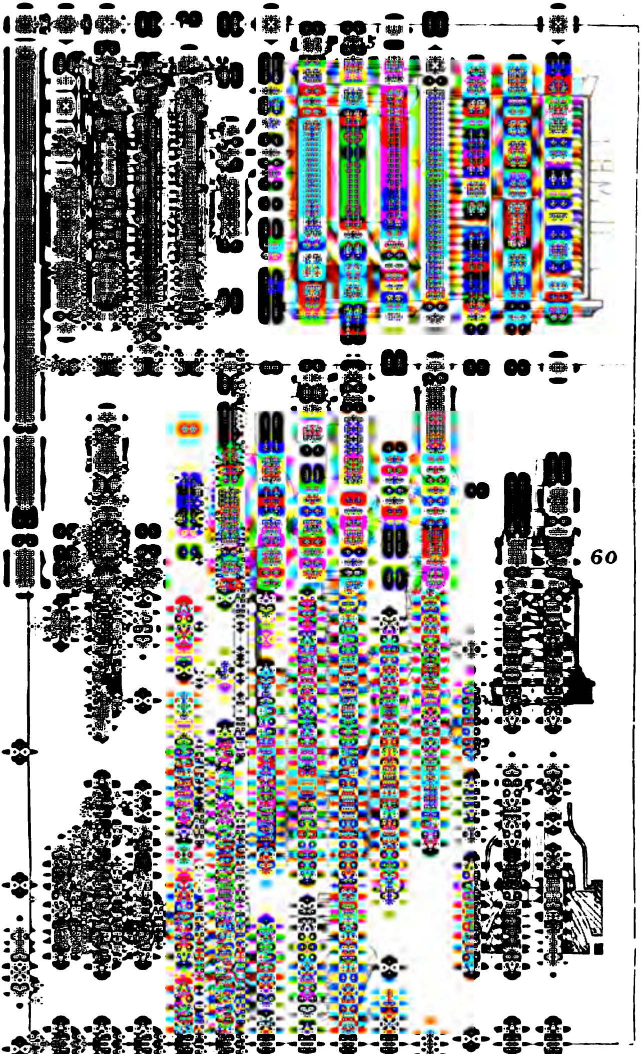
240. **Shutter Blinds** (*fig.* 55 C) are merely outside shutters, framed with strong laths set obliquely, inserted in the styles: they exclude the sun most effectually, and at the same time admit the air, but they give a gloomy appearance to an inhabited room, and are objected to on that account.

241. **Dwarf Blinds** are intended to keep off the observations of the neighbours or passengers, and are chiefly used in towns; they are generally made with light mahogany frames, either filled up with moveable perpendicular lath, on the Venetian principle, or else with wire-gauze or perforated zinc. In all cases they are intended to allow the inmates of the room to see outwards, whilst at the same time they prevent the reverse from taking place.

242. The **Prices** of these several blinds in London are as follows, and they will be found to be nearly the same in all the principal towns of Great Britain.

Prices of Window Blinds.

	s.	d.
Best inside Venetian blinds (painted any colour) ... ... per foot	0	8
Small sizes, under 15 feet ... each	10	0
Best linen Holland rolling blinds, per foot	0	4½
Small sizes, under 15 feet ... each	5	6
Best linen Holland spring rolling blinds ... ... per foot	0	8
Small sizes, under 15 feet ... each	9	6
Dwarf Venetian blinds per foot	3	6
New painting, taping, and lining Venetian blinds ... per foot	0	4



[illegible] 129—131.

	s.	d.
Wire gauze blinds, painted any colour, plain, in mahogany frames, per foot	1	6
Ditto ditto ornamented with panel lines ... ... per foot	1	9
Ditto ditto ornamented with lines and corners ... ... "	2	0
Ditto ditto ornamented with borders ... ... "	2	6
Ditto ditto ornamented with gold lines and corners ... "	2	6
Plain and ornamental writing in gold, on wire blinds, per inch	0	2½
Ditto ditto in colour ditto "	0	1½
French polishing small size frame each	1	0
Transparent blinds, in great variety, from 2s. 6d. each		
Outside Venetian blinds, to draw up in cases, painted any colour, per ft.	1	6
Ditto ditto small sizes, under 16 feet ... ... each	24	0
Outside striped cloth blinds, blue striped cloth ... ... per foot	1	9
Ditto best outside cloth (striped) the hood to fix at any height ... "	2	0
Ditto small sizes under 16 feet, each	32	0
Ditto with circular heads, per foot	2	3
Ditto small sizes under 16 feet, each	36	0
Outside shutter blinds, painted any colour ... ... per foot	2	6
Ditto small sizes under 16 feet, each	40	0

SECT. 3.—ECONOMY OF ARTIFICIAL LIGHT.

243. Guided by the principles which have been explained in the first section of this chapter, it becomes now necessary to ascertain what is the most efficacious and at the same time the cheapest artificial light which is capable of being used. This subject may appear at first sight to be foreign to the practice of house-building, but it must be remembered that it is closely mixed up with the ornamental or decorative part of the internal work, and that, where gas is to be had, its adoption or rejection ought to be decided on at once, for the reasons which are given elsewhere. On the degree of artificial illumination also, in great measure, depend the colours of the walls, papers, &c., so that on all accounts the sooner this matter is settled the better. At the very outset of the inquiry there are several disturbing elements, as, for instance, the amount of light required, the possibility of obtaining gas, the means of ventilation, &c., &c., all of which must enter into the calculation. It is now clearly ascertained, that in proportion to the light given no material comes near to gas in economy and power; and under suitable conditions it will always be used by those who examine into the question for themselves, and who are guided by economical principles. No one will maintain for a moment that gas is as pleasant in every respect as an equivalent or, at all events, a sufficient, number of wax candles. These give a most delightful and steady light, and are superior to all other modes of illumination, but their expense is so enormous, that in families where economy is of importance their use is forbidden on ordinary occasions. Composite candles are considerably cheaper than wax, but their light is not quite so pleasant, and when a strong illuminating power is demanded, they will only serve in the absence of gas. The use of lamps in which camphine or oil is burnt is now restricted to situations where gas is not to be attained, inasmuch as they are obnoxious to all its objections, and have many of their own besides. In the following remarks the various plans of artificial illumination will be examined, and, as nearly as possible, the comparative cost of each, for a period of five hours, will be given, which is about the average duration of an "evening at home."

244. THE VARIOUS KINDS of artificial light adopted in our houses are confined to three principal groups, viz.:—1st. Candles composed of fatty matters, which are solid at the temperature of this climate, and capable therefore of being used without any kind of lamp, but merely requiring a holder or candlestick. 2nd. Of lamps, in which oils, turpentines, &c., are burnt, which being quite fluid at the ordinary temperature, require the aid of some machine to hold the material, and distribute it at the proper rate. 3rdly. Of gas produced from coal or oil, and burning at the mouth of tubes which conduct it to the part to be lighted.

SECT. 4.—CANDLES AND CANDLE-MAKING MATERIALS.

245. CANDLES, as burnt in the present day, may be grouped into four classes, namely, 1st, those made from bees-wax, known as wax-candles; 2nd, neutral fat, as spermaceti, tallow, and stearine candles; 3rd, fat acid, known as stearic-acid candles; and 4th, composite candles, being a mixture of stearic acid and neutral fat. The substances from which these are made, are five—wax, spermaceti, tallow, palm-oil, and cocoa-nut oil.

246. THE CONSISTENCE of these fats varies from that of cream to the solid, compact, and resonant mass known as wax. The four last may, by mechanical means, or by the application of cold, be separated into two, or sometimes three, different substances, which mix with each other in any indefinite proportion. Thus, by submitting tallow to pressure between layers of paper,

the latter material becomes impregnated with a permanently fluid oil, or *olein*, as it is called; whilst the solid remnant becomes harder, more brittle, and more difficult of fusion; and it is found to consist of two solid fats, *margarine* and *stearine*, more or less acidified.

247. When the neutral fat is brought in contact with alkaline solutions at a high temperature, it undergoes a remarkable change, termed *saponification*. The soap thus formed is again acted on by mineral acids, which convert the margarine, stearine, and olein into *margaric*, *stearic*, and *oleic acids*. But in addition to these substances, another is evolved by the saponification of fats, of a sweet taste and watery consistence, soluble also in water itself, and called *glycerine;* this last peculiar fluid remains in the mother-liquor from which the acidified fat has been separated. All these bodies will hereafter be found alluded to in the various candle-making processes.

248. Wax is obtained from the comb of the honey-bee, and in its original state is known as bees-wax, which has a considerable quantity of honey still united with it, and in consequence of this will not burn steadily; nor would its deep yellow colour be approved of in the drawing-room. To get rid of these objectionable qualities the wax is purified and bleached, by first soaking it in cold water, and then boiling it in hot water, after which the wax is allowed to collect at the top, and to become solid by cooling, when it is still to be bleached, which effect is produced by the action of the light and air upon it while in the most minute state of subdivision of which it is capable, that is, in very thin laminæ. Chlorine bleaches wax very readily, but it at the same time renders it very brittle. When thoroughly bleached, the wax is cast into the thin round cakes, in which form *white wax* is sold. Bees-wax melts at 145 degrees Fahrenheit; white wax at 155 degrees. It is adulterated with tallow, stearic acid, spermaceti, resin, white-lead, starch, and sometimes pea-meal.

249. Spermaceti is obtained from the head of the sperm whale, where it lies encased in a large hollow, which holds from half a ton to a ton of this substance, mixed with sperm oil. The two together are pressed in horse-hair bags, from which the oil runs out, leaving the spermaceti itself behind. and it only requires to be heated and skimmed, and then washed with a solution of potash to make it fit for the market as *pure spermaceti*. This has little or no smell or taste, and has a semi-transparent whitish colour, with an irregular chrystalline fracture; it melts at 112 degrees Fahrenheit, and burns with a clear light very similar to that of wax. It is not capable of a very great amount of adulteration, in consequence of its transparency, which is impaired by any admixture.

250. Tallow is properly the hard internal fat or suet of the ox and sheep, but often mixed with that of the horse, both in the tallow of this country and in that imported from abroad. It is obtained by melting the suet slowly, after cutting it up into small pieces, and then pressing it. The remnant from this process, consisting of the cellular membrane in which the fat was contained, called *greaves*, is sold for feeding dogs, poultry, &c. Tallow melts at 92 degrees. It is chiefly adulterated with the soft fat of the surface of animals, and with that of the hog, both of which cause candles composed of this adulterated material to flicker and sputter. Tallow is now ascertained to consist of two solid substances, namely, stearic and margaric acids, and two liquids—oleic acid and glycerine, which are easily separated by severe cold; and also, though not so easily, by certain chemical methods, two of which will presently be described.

251. All four of these substances burn with flames of different colours, and affording light of varying degrees of intensity. Stearic and margaric acids give a full flame, with comparatively intense light, whilst that of oleic acid is nearly as intense, but whiter; glycerine, on the other hand, emits a scarcely visible blue flame, requiring a large proportion of carbon in the wick, and therefore being wholly unfit for illuminating purposes. It is found to be desirable to get rid of the oleic acid, on account of its low melting point, and consequent softness to the touch, while the glycerine is injurious from the deficiency in its lighting power, and from its requiring the presence of a large wick, as above-mentioned. Hence the chief aim of the candle-maker is to remove them by economic methods so as to save them for certain cases to which they are better adapted. The oleic acid is highly prized for oiling wool, and the glycerine for many purposes in medicine and the arts, some of which will be found detailed in future chapters.

252. Palm Oil is now largely consumed in this country for a variety of purposes. It has a buttery consistence in this climate, and is of a yellowish or orange colour, being almost red when quite fresh, with an agreeable sweetish smell. It is the produce of the *Elais guianensis*, and comes chiefly from the coast of Africa. This oil melts at 90 degrees, and may be separated by cautious pressure into two portions, one fluid, *elaine*; the other solid, *palmitin*, easily convertible into *palmitic* acid, resembling stearic, or

rather margaric acid, and being the substance which is chiefly used for the composite candles sold by Price and Co., of Vauxhall, the detailed manufacture of which is given under that head. Palmitin melts at 118 degrees, and palmitic acid at 116 degrees Fahrenheit.

253. **Cocoa-nut Oil** is extracted from the kernel of the common cocoa-nut, *cocos nucifera*. It also contains *elaine*, and a solid fat, giving, by chemical processes, a substance called *cocinic* acid, which is very similar to the palmitic acid described in the last paragraph, and which is used for similar purposes to form the cocoa-nut composite of the shops. It melts at 95 degrees, and consequently these candles are not so hard in the hot summer weather as the palm oil composite, which melts at about 116 degrees.

254. **Wax Candles** are made by dipping fine cotton wicks in wax melted carefully, so as to avoid raising its temperature unnecessarily. These are then drawn through holes in a board, and when cool are dipped again, and again, each time passing them through the hole, and thus removing the superfluous wax. But this method does not produce the fine smooth gloss on the surface which is required, and which can only be obtained by casting in a mould, the candle being first brought up to a certain size by dipping, as above described, and then finished by placing it in a hot mould, and filling up the vacancy between its sides and the candle with melted wax. It is found that without this precaution the wax has a tendency to form into crystals, and break up into sections, and to avoid this, the only plan is to make all but the outside in successive layers by dipping.

255. **Neutral Fat Candles** are made either by casting or dipping, the various materials being all capable of being worked in either way when carefully melted and cooled. Spermaceti candles are chiefly cast; and as now manufactured they are of great beauty, very clean in the hand, and affording a good light. Tallow and stearine candles are made either by casting or dipping, and are hence called tallow "moulds" or "dips," or cocoa-nut "moulds" or "dips," as the case may be. Tallow candles are of three kinds—moulds, dips, and rushlights. Moulds and dips have each a cotton wick, while the rushlight has one of rush. In making the mould candle the wick is strained from top to bottom in a pewter mould, into which the melted tallow is poured, and when cold extracted in the form in which it is sold. They are called long or short sixes, fours, &c., according to the number of them which make a pound. Dips are made by dipping the wicks in the melted tallow again and again, until they have acquired sufficient size for the purpose to which they are allotted; after each dipping, except the last, the candle is drawn through a hole in a board so as to remove all superfluous lumps, and reduce it to the intended shape. Rushlights are made in the same way as dips. Tallow for candles should be a mixture of beef and mutton suet, in the proportion of one-third of the former to two of the latter, if the kidney-fat or suet only is used, but if any subcutaneous fat is mixed with it, more than half of mutton fat must not be employed, or the smell will be exceedingly unpleasant. Tallow candles always smell more or less disagreeable, and for this reason they are not used, except from economical considerations; but as they give a good light when regularly snuffed, they still maintain their hold upon those who value this quality more than they dislike the unpleasant smell, which is chiefly given out when actual combustion ceases, and the fatty matters are passing off into the air without suffering decomposition. There are, however, two great objections to these candles, one being, that from the size of the wick it is not all burnt to ash, and requires constant snuffing; the other, the disagreeable smell after being put out. To these objections spermaceti is not obnoxious, as the olein and glycerine are removed from it in its preparation.

256. **Stearic-acid Candles**, as originally made, consisted of what was then called "stearine," but which is now considered to be a more or less impure mixture of stearic and margaric acids. It is prepared by saponifying tallow by lime, and then decomposing the insoluble soap so formed by boiling it with diluted sulphuric acid, after which the residue is submitted to a strong press, by which the oily and watery particles are entirely got rid of, leaving a white solid mass behind. This process, however, is a very expensive one, requiring from 14 to 16 lb. of lime and about 30 lb. of sulphuric acid to each cwt. of tallow, and the product fit for candles is less than half of the weight of tallow operated on, whilst the oily and watery particles are comparatively worthless. It is therefore little used in the present day. Arsenic was employed in the formation of stearine into candles in the early stage of the manufacture; but it is now discarded, partly because it was found to be prejudicial to health, but chiefly from the improvements in the manufacture doing away with all necessity for it. The object in using it was to prevent the crystallization of the stearic acid in cooling, which took place because the material was poured into the moulds at the temperature of 240 Fahrenheit. In modern candle-

making, the material is poured into the moulds at so low a temperature that congelation has already begun, and in this state the formation of crystals is effectually put a stop to, so that arsenic is not required, and undoubtedly it is not used.

257. **PALMER'S METALLIC-WICKED CANDLES** are made of *stearine*, but it is not pure, being manufactured under the old process from tallow deprived of a part of its *elaine* or oily matter. The chief advantage of these candles is that the wicks in burning curl down very much, and consequently do not require snuffing. This result is produced from their being compounded of several strands in each; and one of these being made up with the addition of bismuth in a state of subdivision, burns at a different rate to the rest. In addition to this the wicks are wound spirally round a rod in different directions, and in this state they are dipped in the tallow, the result being that the wicks not only turn on one side in burning, but they each turn away from the other, which in a compound wick composed of four is very remarkable and ingenious. They are used in tubes forming the stands of lamps, crowned with a glass, and in these tubes they are constantly pressed up against the top by a spiral spring, and therefore they always present the wick at the same height. The four-wicked Palmer's candle gives a very good light, nearly equal to a *moderateur* lamp, or to a small fish-tail gas-burner; it is called the *magnum*. The three-wicked candle only gives half this light, and is very rarely used in consequence. The two-wicked about that of a candle and a half; and the small metallic single-wicked candle, eight to the pound, gives about three-quarters of the light of an average mould when snuffed, or of a composite candle. The single wicks last not quite six hours; the double wicks, which are six to the pound, last about 4½ to 5 hours; and as the price of all is 8d. per pound, except the magnums, which are 9d. per lb., and burn so rapidly as to be very extravagant, they may be considered to be a very cheap as well as steady light; but they can never be made equal to either wax, oil, camphine, or gas in intensity and whiteness of light.

258. **A HOST OF OTHER STEARINE CANDLES** are sold under various names, and are sometimes substituted for the goods of the Belmont Company; but the above are the only ones which are at all worth the consumer's notice, and they are now almost entirely superseded by those made under the patents obtained by the Vauxhall Company, known as "Price and Co.," whose manufactures are finding their way into every part of the world, and in England have no competitor—upwards of 700 tons of candles being made by them every month. Two of this company's sorts of candles are, however, to be classed with the stearic-acid candles, being composed of the purest palmitic acid, a substance very similar to stearic acid, but obtained from palm oil: these are the patent Belmont wax and sperm candles; but as their composition will scarcely be understood without a reference to that of the other products of this establishment, I shall defer any account of them to the next paragraph, where will be found a description of the process carried on in the manufacture of these different candles, for which I am indebted to Mr. Wilson, one of the firm, who has delivered several lectures at the Society of Arts on the subject.

259. The candles known as **PRICE'S COMPOSITE** (under the several distinguishing names of best composite, and composites Nos. 1, 2, 3, and 4) are obtained by submitting any of the cheaper fats, as animal tallow, palm oil, cocoa-nut oil, to the action of concentrated sulphuric acid. Six tons of the raw material, usually palm oil, are exposed to the combined action of 6¾ cwts. of concentrated sulphuric acid, at a temperature of 350 degrees Fahrenheit. In this process glycerine is decomposed, large volumes of sulphuric acid are given off, and the fat is changed into a mixture of fat acids of a very dark colour, with a high melting point. This is washed to free it from the charred matter and sulphuric acid, and is then transferred into a still, from which the air is excluded by means of steam. The steam is heated to 500 degrees Fahrenheit, in a system of pipes, similar to those used in the manufacture of iron by hot blast, and its only use is to save the still, and reduce the gaseous loss in distillation. The product is beautifully white, and is known commercially as stearic acid, but it is still to be submitted to some other modifications, for the purposes to which the Belmont Company apply it. Thus, it is converted into—

1st.—**PATENT BELMONT WAX CANDLES**, made of this distilled acid from palm oil, hot pressed, and composed of what is called palmitic acid, but slightly tinged with gamboge to imitate the colour of natural wax. Their light is equal to that of wax, but rather more red; and as their melting point is high, and they do not therefore soil the fingers more than the material which they are meant to imitate, they are well adapted for use in warm climates or rooms.

2nd.—**PATENT BELMONT SPERM CANDLES**, the same as the wax, but uncoloured.

3rd.—**BEST COMPOSITE CANDLES**, made of a mixture of this hard palmitic acid and the simple stearine from the cocoa-nut oil. These are not hard to the touch, and soil the fingers almost as much as tallow, but they have little or no smell. They are therefore not fit for hot climates. In the colour and intensity of the light which they give, they very nearly resemble wax, the cocoa-nut having more hydrogen in its composition, and in that way correcting the over red light of the palm acid.

4th.—COMPOSITES Nos. 1, 2, and 3, are made of palm acid and cocoa-nut stearine, the relative proportions varying according to the relative market prices of palm oil and cocoa-nut oil at the particular time when the candles are made.

5th.—COMPOSITE No. 4 is a description of candle recently introduced, giving a good light, at a low price. They are, however, of a dark colour, with a shade of chocolate, and this is an insurmountable objection with those who are led by their eyes rather than by their noses, to reject them in favour of tallow moulds at the same price.

260. All the stearine candles are cast in a mould in the usual way, and as they cool into an uniform mass none of them require dipping.

261. In 1854, the Belmont Company obtained a patent for a mode of separating the glycerine from the stearine and margaric acids, by passing steam at a very high temperature into palm oil or other fats; and in this way many hundred tons have since been worked; but I believe the process is in no way superior to the sulphuric acid method detailed above. An American chemist, Mr. Tighlman, had previously done this, but in a more complicated mode, pumping the fat and water through a coil of pipe, heated to about 612 degrees Fahrenheit, and kept under a pressure of 2000 pounds to the square inch. It remains to be proved whether either of these processes have any commercial value, but no one will deny that the extreme degree of ability with which they have been carried out deserves every success.

262. A further improvement has very recently been patented by one of the firm of Price and Co., by which the objectionable greasy surface of the stearic acid is done away with. It has long been the object of the composite candle-maker to coat his candles with a surface of wax or other clear material, as, for instance, spermaceti, and for this purpose the attempt has been made to employ such harder materials at their natural points of melting; but this is objectionable. The present improvement consists in employing a solvent for the harder or less easily fusible material used, in order to reduce the melting point, and thus to facilitate its application to candles and night-lights, the solvent quickly evaporating after the casing or external coating has been produced. It is preferred to employ a mixture of stearic acid and white wax; but any other hard candle-making material may be used, combined with a solvent, when carrying out the invention. It is proposed to mix stearic acid with about five per cent. of white wax, and to dissolve these materials in a proper solvent; and it is preferred to use about half their weight of ordinary, or the methylated, spirits of wine. By rapidly dipping candles made of low melting materials, or night-lights, into this solution, and withdrawing them, they will be found to be covered by a thin film of hard material, which may be immediately handled. A similar coating may also be obtained by pouring the solution of stearic acid and wax, or other solutions of candle material, into the ordinary moulds, and then pouring it out again, so as to leave a thin casing of it in the moulds, in like manner to what has before been done when using hard material in a melted state without solvent, and concluding the formation of the candles or night-lights by pouring in an inferior material, or one melting at a lower temperature. By this improvement, night-lights, or composite candles of all kinds, may be handled with as much impunity as wax or sperm candles; this removes the only objection to their use.

263. THE WICKS of all candles but those of common tallow are made with a twist or plait, which compels them to turn on one side in burning, and thus to do away with the necessity for snuffing; and the composite candles being deprived of their glycerine, they do not require nearly so large a wick as those made of tallow. It has been long known that a common mould burnt at an angle with the horizon will consume its wick, inasmuch as the oxygen of the air coming into close contact with the carbon of the wick, it is wholly converted into carbonic acid gas, without leaving any solid carbon behind, as is the case when the wick is enveloped by the usual cone of unburnt gas, as already described at paragraph 234. These candles, therefore, resemble those made of wax in burning without being snuffed, and indeed in all respects but in appearance and in their greasiness to the touch, they approach very nearly to that much-prized material. They flicker rather more in burning, and when submitted to a draught of air or carried from place to place, they gutter in such a way as to waste a considerable portion of their substance, as in fact do the real wax and sperm candles. For these reasons the composites are not suited to servants' purposes, and can only be used

in a state of quiescence; but when thus employed they form a very perfect light, and, in proportion to their cost, are by far the best candles in the market.

264. Night-lights are made and sold by several manufacturers to supersede the old-fashioned rushlight, which they most effectually do in every respect but cheapness, where the old article has a slight advantage. These night-lights are merely very short pieces of stearic acid or stearine with a fine wick, and are burnt either by means of a glass in which they are dropped, and which serves to hold the material when melted, or by enclosing them in a thin roll of paper or wood-shaving; in which latter case they require to be placed in a shallow vessel of water, about a quarter or half an inch deep in that fluid, so as to prevent all danger of the envelope catching fire. They do not smell disagreeably, like the rushlight; and when well made, as by Price and Co.'s last mode, they do not flicker in their burning, but give a steady, small light, very pleasant to the eye. They are sold in boxes of ten or twelve each, at 6d. per box.

265. Candlesticks.—All the modern composite candles, and also the spermaceti, and the patent wax and sperm, as remarked in paragraph 263, are very liable to gutter when carried in the hand, or when submitted to the action of a draught. To avoid this in the former case, hand-candlesticks are made with glasses nearly to the level of a short candle; and no long one should ever be carried about. This kind of hand-candlestick is a very useful addition to our present means of comfort, and is also much more economical, by saving the loss of material occasioned by guttering. It is unnecessary to describe all the ordinary candlesticks, as their use is familiar to every one.

266. Several little Contrivances have been invented for securing the candle in the socket of the candlestick, but they are not in very general use—the usual mode being to wind a piece of paper round the bottom of the candle. They are all made with some modification of a metal spring, but inasmuch as they soon become covered with some kind of oxide, whether they are of iron or brass, they are objected to on that score.

267. Save-alls are used by the economical, in order to avoid the waste of the lowest inch of the candle, which would otherwise melt in the socket of the candlestick, and not only be wasted, but also injure the metal by the heat imparted to it. The best kind of save-all is a short piece of china of the form and appearance of the candle, but having a single spike of iron projecting up instead of a wick. This spike is easily forced into the lower end of the candle when it is burnt within an inch or two of the bottom, and if this is neatly done, the candle impaled upon the point is continuous in appearance with the china, and a casual observer would scarcely notice the addition.

Sect. 5.—Oil and Camphine, and the Lamps used with them.

268. The materials which have hitherto been noticed as being used for the purpose of giving light, have all been of a solid consistence, at the ordinary temperature, and they only become liquid just before being burnt, when the heat arising from the flame produces just sufficient liquefaction in the material close to the wick to enable the latter to draw it up by capillary attraction. But those materials which I am now about to describe are all liquid, except in severe frosts, and consequently some apparatus must be devised for holding them and supporting the wick, which would otherwise be drowned in its own liquor. Numberless lamps have been devised for the purpose, but in the present day very few are found to be effectual. It will, however, be first necessary to examine into the nature of the fluids which are found to be most serviceable, and which are, *turpentine* or *camphine*, *naphtha*, *colza* or *rape oil*, and the various *fish oils*, commonly sold as *seal oil* and *sperm oil;* and besides these, there are several liquids sold the composition of which is kept secret, but they do not appear to possess any advantages over those mentioned above.

269. Oil, Spirit, or Essence of Turpentine is obtained by distilling with water the crude turpentine of commerce, the solid residue being the common resin. When rectified, it forms that clear transparent spirit which is used for so many purposes, and, as prepared, especially for burning in the Vesta lamp, for which purpose it is kept carefully excluded from contact with atmospheric air, it is called *camphine*. This last-named fluid is merely turpentine distilled *in vacuo*; and as it has a strong tendency to absorb oxygen from the air, it quickly becomes spoiled, for the purposes of the lamp, by exposure in an open vessel. Spirit of turpentine, or camphine, being almost entirely composed of carbon and hydrogen, is peculiarly fitted for the purposes of combustion, the only objection being its smell, which is very disagreeable. It also requires great care in the admission of the air, for if not exactly in the right proportion a quantity of carbon is deposited in a solid state, and the lamp is said to smoke. When the camphine has absorbed any quantity of oxygen, this unites, to form

water, with a portion of the hydrogen, and as a consequence there is an excess of carbon to be burnt above what the remaining quantity of hydrogen is capable of effecting with the oxygen in the usual proportion of atmospheric air.

270. COAL NAPHTHA, produced from coal tar by distillation, and PYROXILIC SPIRIT, obtained from the distillation of dry wood, are sometimes mixed with spirit of turpentine, and sold as "burning fluid" for lamps. Some of these fluids are very useful when freshly mixed, but they do not keep long, and there is always an uncertainty about them which renders their employment a very doubtful advantage. The "Pyrogenic fluid," sold by Holmes, of Holborn Hill, appears to resemble this compound, and it certainly gives an extraordinary light at a very little cost. Its composition is a secret.

271. COLZA OIL is the produce of the *Brassica arvensis*, which is grown in large quantities in France and Belgium. It is extracted from the seed by pressure, and is then purified of its mucilage and colouring matter by the action of sulphuric acid. It is largely adulterated, since it has come into general use, with the oil of the common rape, *Brassica rapus*, clarified in the same way.

272. FISH OILS are those obtained from oily fish, and also from the various *cetaceæ* and other marine *mammalia*, which have a coat of blubber under their skins. They consist chiefly of those known as *cod*, *seal*, *sperm*, *head-matter*, and *whale oils*, which are now sold at the following wholesale prices, per ton:—viz., cod, £48; pale seal, £54; yellow seal, £40 to £48; sperm, £129; head-matter, £124; whale, £42 to £46. From these prices it will appear that sperm oil and head-matter (which, being obtained from the same whale, is also sold as sperm in the retail trade), cost three times as much as cod, seal, or whale oil. The price of sperm oil is now so high, that it is almost prohibited as a means of producing light; and seal oil is that which is commonly used in those few families which still adhere to the use of fish oil. But the smell and dirt accompanying its use are so disagreeable, that for oil lamps, Colza oil is rapidly pushing it, as well as the other fish oils, out of consumption. Sperm oil is obtained both from the blubber and the head-matter of the spermaceti whale; when analyzed, it is found to contain a very large proportion of carbon, as will appear from the following comparison with wax:—

	Carbon.	Hydrogen.	Oxygen.
Wax, pure ...	80.3 ...	8.5 ...	11.2
Sperm oil ...	78.11 ...	11.70 ...	10.19

273. THE LAMPS now used for burning the oils just described in our domestic residences, are very limited in number, being chiefly the *carcel* or *moderateur lamp*, the *vesta* or *camphine lamp*, and the *solar lamp*. In addition to these may be enumerated the simple-wick lamp, and a small lamp lately introduced by a Mr. Holmes, of Holborn Hill, which makes its own gas from a fluid resembling turpentine, and is likely to be useful for some purposes, as, for instance, small halls in country places, where gas is not to be obtained. The old Argand lamp, and the annular French lamp, in which sperm oil was burnt, as well as the improvement upon the latter introduced by Mr. Parker, to avoid the shadow cast by the ring of that first mentioned, have all lost their hold upon the public taste, and are now out of date, as well as a long list of other lamps, which were never fairly established in general use, from some inherent defect in their formation. It will suffice, therefore, to examine each of those above-mentioned, beginning with the most simple in construction.

274. THE SIMPLE-WICK OIL LAMP consists of a mere tube of brass, or other metal, with a slit in it, and of a size sufficient to hold a cotton wick without its slipping through. This tube is attached by brazing or solder to a cap which screws down upon the receptacle for the oil, and the superfluous length of wick is allowed to lie coiled up in it. In a very short time, if the oil-holder is filled, the oil is drawn up into the wick, and it will then burn until the cotton becomes coated with carbon deposited from the oil, in consequence of its containing a certain quantity of mucilage and resin, &c. When this deposit has reached a certain thickness it must be removed, either with scissors or with any blunt instrument, which easily breaks it off, and then the point of a large pin thrust into the groove in the tube will readily raise the wick to its proper level. Two or more such wicks fixed side by side, as shown in *fig.* 56, or a wide and flat wick, will give more light in proportion than a single small round wick. Any oil will burn in this way; and the lamps are to be bought from 6d. upwards.

275. THE SOLAR LAMP was invented about fifteen years ago, for the purpose of burning, without smoke, common fish oils, and this it does very effectually, though not without giving off the unpleasant smell peculiar to those materials. It requires cleanliness in its use, but no great skill, as its construction is very simple. The principle mainly depends upon the fact, that heated fish oil ascends by capillary attraction much more readily than cold oil; and in order to raise the temperature, a hollow cone of metal, in connexion with the reservoir,

is fixed over the flame, with a hole at the top through which it ascends. By the power which metals have of rapidly conveying heat, this cone soon warms the oil beneath, and the peculiar action of this lamp is then developed. It is necessary that air should be freely admitted under the cone, which is effected by perforations at the sides; and by this addition alone the ordinary lamp is rendered much more useful and capable of affording a steady, white, and vivid light, instead of the yellow and dim glimmer afforded on the original plan. But when added to the lamp invented many years ago by Argand, and used with common seal oil, which will not burn in that lamp, it gives quite as good a light, and at little more than one-third of the cost, seal oil being, as already shown, about one-third the price of sperm. The Argand lamp consists of a circular wick of cotton woven into a tube, which is placed between two cylinders of brass or copper, and is raised or depressed by turning the outer one to the right or left. This action effects the intended purpose by means of a spiral groove cut on the exterior of the inner tube, in which a traveller runs connected with the wick and with the outside tube, so that as the latter is turned it raises or depresses the traveller in the groove, and with it the wick. The central tube is soldered to the bottom of the reservoir of oil, where air is admitted to it; so that when the cylindrical wick is lighted it has a constant supply of air to its interior as well as its exterior, the gaseous products being thus thoroughly brought into contact with the oxygen, which, as already explained (par. 234), is necessary for perfect combustion, and for avoiding the deposit of carbon in the shape of smoke. When the solar cap or cone is applied to this lamp, a very perfect machine is accomplished for the use of the eye, though, as far as the nose is concerned, not quite so desirable. In the original Argand lamp the glass was a mere cylinder; then a shoulder was added; and of late years in that for the solar lamp an actual contraction of the glass is made, by which the current of air is driven against the flame, ensuring a still more perfect combustion. It is now chiefly used in halls and other situations where the objectionable smell is not of much importance. For a sketch of this modification of the solar and Argand lamps, see *fig. 57*, which shows a section of the various parts described above. The price varies from 7s. 6d. to 30s., or more, according to pattern.

276. The Vesta Lamp, for burning camphine, is the next in point of priority of invention, and also in simplicity of construction, it being a modification also of the Argand lamp, by which it is adapted to the combustion of a liquid which otherwise deposits a large quantity of carbon. This lamp was introduced by Mr. Young, at about the same time as the solar lamp; and his object has been answered fully, when the material he recommends is pure and carefully protected from the contact of the air. In principle it differs from the Argand and solar lamps in the following points—1st, the reserve must be kept as cool as possible, instead of being heated, for the reason that camphine is exceedingly volatile; 2nd, the wick is raised by means of a cog-wheel and rack, which is more simple than that used in the Argand, but which clogs when used in oil; 3rd, instead of the flame being drawn to a point, as in the solar and Argand lamps, in spite of the internal current of air, it is in this lamp thrown outwards or expanded against the outer current, by means of a metal button, which is fixed on a rod standing up from the middle of the inner tube. In these several ways, and with the addition of the contracted glass, the carbon of the camphine is effectually submitted to the oxygen of the air, and is thoroughly converted into carbonic acid. (For the form of this lamp, see *fig. 58*.) It is very readily trimmed, by cutting the wick off about the eighth of an inch above the level of the inner tube, and it only requires to have this done every time it is burnt, and to be kept replenished with camphine, in order to ensure a good light—that is, as I have already observed, if the camphine is of good quality and carefully kept from the air. In the process of burning, a certain quantity of resin is deposited upon the outer tube, and this should be chipped off two or three times a week. In order to preserve the camphine, it is sold in tin cases carefully corked; and if these have their corks immersed in water by inverting them in a basin half filled with it, during the time when they are in use, the camphine will keep for a considerable time. One great point necessary to their successful use, is to avoid turning the wick *down*. It may at any time be turned up without injury, but if this is over-done, and the wick is turned down again, it never afterwards gives so good a light. This lamp gives an exceedingly pure light, of a very steady character, and white colour. There is little or no smell of camphine, but to a delicate nose the result of the combustion is always objectionable, giving a faint odour, rather sweet and sickly, and when the camphine is impure, highly offensive.

277. A Small Camphine Night-light is sold, which is a very useful addition to the bed-room, and an exceedingly cheap mode of keeping up a nocturnal glimmer sufficient

for all ordinary purposes. It has one objection, consisting in the fact, that it is very readily extinguished either by a rapid movement of the lamp, or by a careless attempt to light a candle at it. This little lamp is merely an ordinary reservoir, with a simple tube containing a common cotton wick; this is invested with a hollow cone of metal, to the inside of which the air is admitted, and which may be raised or lowered upon the flame at pleasure (see *fig.* 59). It burns very steadily, and gives a light sufficient for the purpose at the cost of a farthing for nine or ten hours, according to the price of camphine.

278. THE CARCEL OR MODERATEUR LAMP is the latest real improvement upon our table lamps; and it is now gradually becoming introduced into general use, as the best kind of lamp for lighting our rooms, though still rather an expensive one. The great difficulty in all oil lamps is to supply the oil sufficiently to the wick without an overflow, which is apt to grease the furniture or dress. In the solar lamp a reservoir is provided for this purpose, which must be emptied every day, or on alternate days; and the same is the case with those lamps in which the oil flows downwards from reservoirs above the level of the wick—as, for instance, the French annular lamp already alluded to as out of fashion. In the MODERATEUR, however, the oil is forced up from a cylindrical chamber below by means of a large piston, which is driven downwards by a spiral spring (see *fig.* 60 A, which indicates this spring); P is the chamber containing the oil; O is the piston—but this instead of being thick and solid, like the ordinary pump, has a loose fringe of leather which, at its upper part, does not quite fit the inside of the cylinder. By this plan the oil readily passes downwards between the piston and the cylinder, because the leather then recedes from its walls; but the moment pressure is applied to the surface of the piston the oil in the cylinder expands the leather, and causes it to fit most accurately, preventing the oil from returning, and in this way acting as a valve, whilst it also prevents the piston from getting out of repair. This, therefore, is a perfect pump acted on by a spring; and the way in which the spring is wound up and the oil allowed to reach the wick is as follows:—The piston-rod is toothed, and is acted on by a cog-wheel at D, which is moved by a common handle outside the lamp, and checked by the incompressibility of the oil. Near this rod is a small double telescope-tube, one part sliding into the other, so that it may adapt itself in length to the position of the piston. The lower end of this is soldered into the piston, and the upper pours its contents over the wick, the amount of oil being regulated by a wire which is introduced into the tube, and may be enlarged or diminished at pleasure. The tube, as a matter of course, communicates with the oil below, and when the spring is in action after being wound up, it conveys the oil slowly from the chamber to the wick, which is of the circular Argand form. In filling this lamp the oil is poured in from above, while the piston is at the bottom of the cylinder, which it fills, surrounding and enveloping the spiral spring; but the moment the piston-rod is raised by the handle, the oil passes the loose edge of the piston and fills the lower part of the cylinder ready to be acted on by the pressure of the piston as soon as the hand is removed. There is also another key above the piston-rod handle which turns the stage on which the cotton wick is fixed upwards or downwards, according to the desired intensity of the flame. These lamps are made in Paris, in great numbers and of various qualities, some being very inferior in their illuminating power, but the greater part of them being exceedingly useful and ornamental articles. The patterns vary immensely, but the general character may be summed up under three classes—1st, the dwarf lamps, capable of being raised by stands; 2nd, table lamps, in which the reservoir is placed at the bottom of a pillar; and, 3rd, vase lamps (see *fig.* 61 A, B, and C), intermediate between the two. These, again, are variously ornamented by the different manufacturers. The price varies from £1 10s. to £5 15s. 6d., or even more.

279. HOLMES' OLEFIANT GAS LAMP consists of a small brass tube, closed at one extremity, and at about three-quarters of an inch from this drilled with six or eight fine holes. A common cotton wick is passed with a forked wire nearly up to these holes, and is then cut off close to the open end, after which it is immersed in what he calls his *pyrogenic fluid*, when it is fit for use. It is only necessary to heat the brass tube with a piece of paper for a few seconds, after which the spirit is volatilized, or converted into gas, which, as it issues out of these fine openings in little jets, is set on fire, and burns with a very pretty appearance, giving a good light in proportion to the cost. The lamp is sold at prices varying from 6s. 6d. to 15s.; but there is a slight smell of the fluid which is not adapted to sitting-rooms, though quite innocent in a hall or passage. Its cheapness, however, makes it adopted by many who, from the nature of their occupation, require a steady, strong, and pure light, and who cannot afford to pay for those which are quite free from smell.

280. **PALMER'S METALLIC-WICK CANDLES** are burnt in lamps, which are merely ornamental tubes containing a spiral spring, by which the candle is constantly pressed against a nose or cap, perforated to admit the wick. This cap being heated by the wick, turned down from its peculiar make, melts the tallow or stearine, at the outer part as well as the interior, and the consequence is that there is nothing to prevent the candle rising as fast as its material burns.

281. **CARRIAGE LAMPS** for private use are always constructed on the same principle as Palmer's candle lamp, with the addition of metal reflectors, which add to the light very considerably. The ordinary composites are all too soft to bear the jar of the road, and nothing but wax has, until lately, been discovered which will burn well in a carriage lamp. Price & Co. have, however, brought out a new carriage-lamp composite candle, which is said to answer, but I have had no cpportunity of seeing it. Oil is frequently used in stage and railway lamps, but it is scarcely suited to private carriages, from its tending to soil the hands in case of its being necessary to handle the lamp, which will sometimes happen when there is no servant at hand. Wax, therefore, as I said before, is the sole material in ordinary use for carriage or gig lamps.

SECT. 6.—GAS AND GAS LAMPS.

282. **COAL GAS** is one of the products of the destructive distillation of pit-coal, in which it is submitted to a great heat in cast-iron retorts. From this certain permanent gases are given off, as well as steam, volatile oils, and ammonia in small quantities, varying in their proportions according to the temperature used, which, if raised too high, increases the quantity, but diminishes the illuminating quality of the gas. From the retorts the gas is collected in a large pipe half-filled with liquid, and called the *hydraulic main*, after which it passes into a *refrigerator*, usually consisting of a series of iron pipes, cooled on the outside by a stream of water. In these the tar and ammoniacal liquid are condensed, and the gas proceeds to another part of the apparatus, where it is submitted to the action of the hydrate of lime, which absorbs the sulphuretted hydrogen and carbonic acid gases. This last apparatus is called the *purifier*, and it consists of a series of iron vessels partly filled with a mixture of hydrate of lime and water, in which an *agitator* is kept constantly in motion, so as to prevent the subsidence of the lime. The gas is admitted into the bottom by a great number of minute apertures, and is thus thoroughly submitted to the action of the lime. In this state it is generally supplied to the consumer, but to render it thoroughly pure, it should be passed through diluted sulphuric acid to remove what little ammonia remains. Coal gas, thus manufactured and purified, is collected in those large reservoirs called *gasometers*, from which it is supplied by large pipes, called mains, afterwards branching off into lesser pipes to all parts of the town which are within a certain area. As gas is specifically lighter than air, the higher the situation to be supplied, the less pressure is required, and *vice versâ*, consequently gas-works are always placed in a situation as low as possible, when compared with the level of the parts to be furnished with it. Purified gas is supposed to consist of the following substances, but as the difficulties of analysis are very great, and gas also varies much in different seats of its manufacture, it can only be considered as an approximation to the truth:—

COMPOSITION OF PURE GAS.

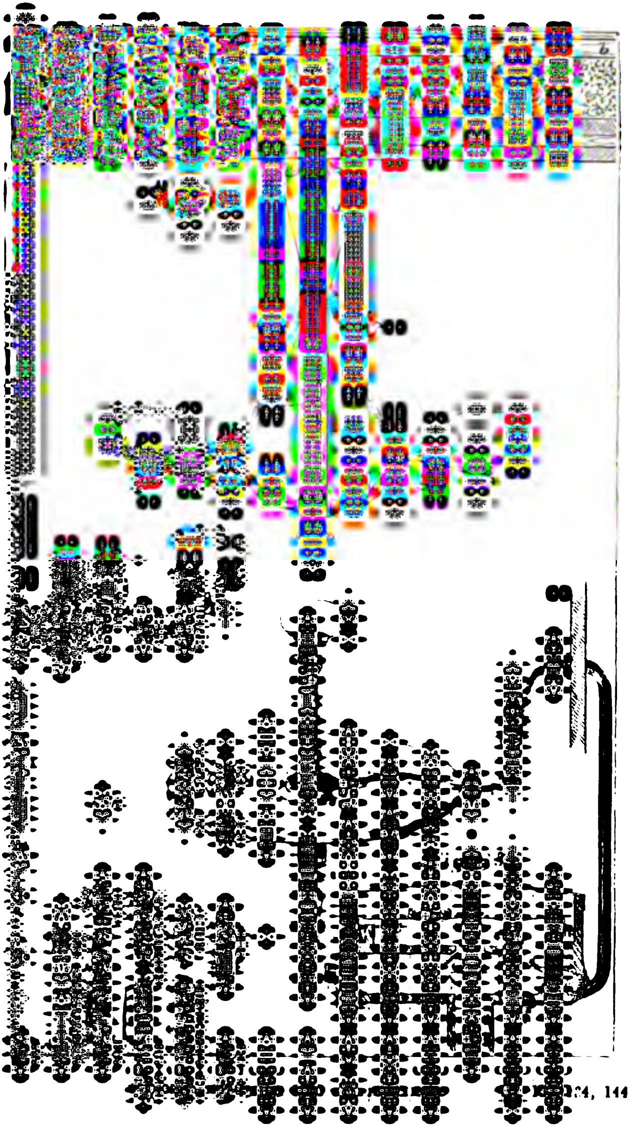
Light carbonated hydrogen.
Olefiant gas.
Hydrogen.
Carbonic oxide.
Nitrogen.
Vapour of volatile liquid carbides of hydrogen, which greatly increases the illuminating power.
Vapour of bisulphide of carbon.

MATERIALS SEPARATED IN THE MANUFACTURE.

Tar and volatile oils.
Sulphate of ammonia, chloride and sulphide of ammonium.
Sulphuretted hydrogen.
Carbonic acid.
Hydrocyanic acid or cyanide of ammonium.

283. **OIL GAS** is made by submitting oil to the heat of a retort filled with coke, and requires no purification. Its high price has hitherto forbidden its general use, but a company is now in process of formation which proposes to supply the public with an apparatus by which oil gas may be obtained at a moderately low cost, in private houses, with the skill of an ordinary servant. The process is at present a secret, but it is said that common and coarse oily matters are used by a new and patent method.

284. **METERS FOR GAS** have been already described, under paragraph 211, devoted to a consideration of the use of gas for heating purposes. These meters measure it equally well, for whatever use it is intended; the dry meter however having this advantage, that it does not aid in the deposit of the



[illegible]4, 144.

water in the tubes which is always going on more or less, and which it is necessary to avoid as far as possible by taking care that the pipes shall all drain into the meter, without any depending portions except at the burners themselves, where it is impossible to avoid them. A very frequent objection made to the use of gas is, that it is apt to go out; but this can only be caused by a defect of the meter, which sometimes has not water enough in it, and then a valve drops, and the canal is closed. This valve is intended as a precaution against fraud, for, without it, it would be possible to remove a great part of the water, and thus cheat the gas company. The consumer should take care that the water is kept up to the proper level, either by getting the gas-fitter to explain to him what is necessary, or by seeing that it is done at regular intervals.

285. Gas is now universally burnt in the public lamps of our cities and towns, and its use in private houses is daily becoming more and more general. Its power of illumination is so great, as compared with its cost, that it recommends itself to every one who values economy; but its low price often leads to an abuse—the light from it is frequently unnecessarily and injuriously strong, by which the eye is fatigued, the air of the room rendered unfit for respiration, and raised in temperature to a degree which is disagreeable and actually injurious to the head, upon which it generally strikes with double power. When it is recollected that our ordinary gas-burners are each equal to from six to twelve wax candles, and that two or three of them are often burnt in a small room, it will readily be understood that a greater amount of light is employed than is required for any ordinary occupation. But because a common *bat-wing* burner costs somewhat less than a single candle, either of tallow or composition, it is thought desirable to spend the same money as two or three candles would cost, and thus a light is produced equal to twenty or even thirty candles, and great astonishment is expressed that the room is hot and oppressive. But if the equivalent number of candles were lighted, the same effect would be produced; and if of tallow, with the additional smell peculiar to that offensive article. If, therefore, the room is small, and not provided with the proper means of ventilation, as described in paragraph 227, a single burner is all that is either necessary or prudent, which will light the room perfectly for any ordinary purpose, and will not be felt, in point of heat or combustion of oxygen, more than half-a-dozen candles. Gas burnt in the kitchen, where one or two servants only are kept, is, I believe, so much money wasted, because they are constantly requiring a light in other parts, and must or will keep a candle burning in addition. Where, however, there are several servants, it may be used with advantage, and one burner will afford light enough for each apartment.

286. The Burners now in use are the following, viz.—1st, the *fish-tail;* 2nd, the *bat-wing;* 3rd, various kinds of *Argand burners*, of which the *universal* is the most common, and the *sun gas-burner* of Deane and Dray, in my opinion, far the best.

287. The Fish-tail Burner consists of a tube of metal screwed on to the end of a gas-pipe, and having two holes drilled in its extremity in such a way that two streams shall cross one another, and thus produce a flat flame in the form of a fish's tail (see *fig.* 62 A). The combustion of the gas is very perfect, and consequently very little carbon is deposited in the shape of smoke. It is the form usually adopted in houses, for the above reason; and being also tolerably economical in point of the light which it evolves, and not easily affected by variations in the pressure, it is most probably the best suited to domestic purposes. It is made of three sizes, which burn about three, four, and five feet per hour, varying a good deal according to the pressure. For the cost, see table, page 137.

288. The Bat-wing Burner is like the last, a small tube of metal, but the canal, instead of ending in a couple of holes, spreads out into a thin slit, which is effected by a fine saw, and thus the gas is emitted in a complete semi-circle, or in the form of a bat-wing (see *fig.* 62 B, in which is given the full view of the tube while burning the gas, and C, that of the slit in a quiescent state). These are also made of three sizes, which burn five, five-and-a-half, and six feet of gas per hour, and without much smoking; but they do not burn so steadily as the fish-tails, and they are perhaps more liable to smoke, so that they are not so well suited to inhabited rooms. The light is however more vivid, and they are much used in factories, work-rooms, &c., where a very strong light is an object. But both of these burners give a somewhat flickering light, which is very trying to the eyes, and on that account objectionable to all but the very strong-sighted.

289. Argand Burners are made of so many forms, that it is almost impossible to allude to them here so fully as to comprehend even a small per centage of them. There are, however, several points of resemblance to the burners of oil lamps in point of principle and detail, except that in gas no wicks are necessary. But the central tube for air, the button, and the contracted neck in the

glass are all here introduced. The great objection to these burners is that they make a singing noise in burning, and also require a particular pressure for each sort, and that if this is increased, they will smoke to a most disagreeable extent, because then more gas is given off than the air is able to supply with oxygen. Deane and Dray's patent sun gas-burner gives a most brilliant light, and burns all its gas in a very superior style, and it is admirably adapted to all lighting purposes, if well managed; but as a very slight variation in the pressure affects it, so as to make it sing, it requires a throttle-valve plate, in addition to the regulator. This plate, with its index, should be fixed in each room, at a cost of 10s.; and then by turning the index to the number of lights to be burned, the exact amount of gas is admitted, and the result is a most perfect and economical combustion. To obviate this occurrence, which is also felt in a less degree with the fish-tail and bat-wing, several instruments, called regulators, have been introduced, but the following is the only successful one as far as my experience goes.

290. JUDKINS' IMPROVED GAS REGULATOR (secured by royal letters patent).—The object of this improved regulator is to enable any gas-consumer to reduce the pressure, which varies from one and a half to three inches, as delivered to him from the gas-works, through the street mains, to the most economical burning point, which is found to be from three-tenths to five-tenths of an inch, according to size and kind of burner used. It has the following advantages to recommend it to the consideration of *all* gas consumers:—1st, it can easily be adjusted to supply gas at any required pressure below that of the street; 2nd, when once adjusted, it admits of *little variation* in lights burning, whether they are few or many, whatever the fluctuation in the street pressure may be; 3rd, the light being purer where there is perfect combustion, is more healthy and agreeable; 4th, a saving of from 25 to 35 per cent. in the consumption of gas is obtained. The details of construction are as follows, see *fig.* 63, in which A is the supply-chamber, which is screwed on to the meter, either at K or H, as most convenient; the other one being closed with a screw-plug, as at H. The supply-chamber communicates with the regulating-chamber by an opening guarded by a metal valve (B), which is suspended by a rod to a metal lid (C) in such a way, that as the lid rises by the extra pressure of the gas, the valve is lifted with it and limits the supply of gas, until the pressure of the lid, aided by the weight D, causes it again to fall, and thereby let in more gas. The lid works in the mercurial trough (E E), so that little or no friction is occasioned, and no escape of gas. On the top of all is a moveable cover (I), merely placed there to protect it from injury. The plug (G) is solely intended to let off any water which may collect in the machine, as is often the case in all gas vessels; but by unscrewing this plug it will escape at any time. The arrows mark the course of the gas, and it will be readily seen that the valve is seldom perfectly close, but acts as a means of rendering the opening of a size proportioned to the pressure and to the demand. The more gas is burnt, the more the lid descends, and consequently, the more gas is admitted through the valve; and if the pressure is too great or too little, it may be varied by moving or increasing the weight D. For fish-tail and bat-wing burners this is all that is required, and any number may be used with it; but for Argands, especially the sun gas-burner above alluded to, the weight must be altered every time the *number* of burners is varied, unless the additional dial-plate is introduced, as described in the last paragraph. In this way the nicest graduation is effected, and any number of lights, up to that for which the particular regulator is constructed, may be burnt without any increase or diminution of pressure. The light obtained in this way is very much more pleasant and steady, and also more economical, inasmuch as all the gas is burned, and no waste is produced. It appears to me a great step in the application of gas to house purposes, in point of health and economy; and from practical experience I am satisfied, that gas burnt with this aid is far less fatiguing to the eyes. Its advantages over other regulators are, that it is more simple in its construction; more sensitive in its operation; and less liable to get out of repair; and requires no more attention than a *meter itself*. The price charged varies according to the size of the regulator (exclusive of mercury and fitting, which ought to cost on the average about 6s).

Size.		Will supply		£	s.	d.
½-inch	...	12 Lights	...	1	1	0
¾ ,,	...	25 ,,	...	2	0	0
1 ,,	...	50 ,,	...	3	3	0
1¼ ,,	...	80 ,,	...	4	5	0
1½ ,,	...	150 ,,	...	6	0	0
2 ,,	...	300 ,,	...	10	0	0

291. FOR OUR DOMESTIC USE, GAS is consumed by means of several appliances, which are intended to make it suitable for all occasions on which it can be wanted. Thus, sometimes a whole room is to be brilliantly lighted, and with an ornamental effect, and for this purpose a chandelier,

er, as it is sometimes pedantically called, a *gasilier*, is fixed to the centre of the ceiling. A pipe of white metal is carried up the walls imbedded in the plaster, or behind the shutter-boxings or other woodwork, and then between the ceiling and the floor above to the proper place, where it perforates the former, and is soldered into a tube attached to the nearest rafter by means of screws and a strong block of wood. In this way the gas is conveyed into the room; but, besides this, it is necessary that the tube shall sway in all directions so as to allow of its being touched without danger of breaking; and secondly, that the whole shall be capable of being raised and lowered to suit the taste of the party using it. The first of these objects is effected by means of a ball and socket-joint close to the ceiling, whilst the second is obtained as follows:—The tube below the ball and socket is a small one of copper, and it has a projection or ridge on one side, reaching from top to bottom. The central tube of the chandelier has a groove corresponding with this ridge, and another still smaller tube inside of it soldered to the bottom or blind end of the outside tube, so that there are really three tubes in every gas chandelier on this principle, the upper one through which the gas descends being dropped between two others attached together at the bottom only. By a reference to *fig.* 64, this will more clearly be seen, and it will then appear that the gas in the tube A can only pass on into the tube B, which ends in the two branches there shown, because it is prevented flowing out (between B and C) by the water which fills up the interval and rises to the line D. This is called the water-slide, and is the only effectual mode of preventing the escape of gas when a slide is required. The water, however, evaporates in use, and requires occasional replenishing, which may be known by the smell of gas in the room, and by a slight but sharp bubbling noise heard near the chandelier. Weights are so attached to the two portions sliding on each other by chains passing over pullies, that the chandelier is accurately balanced, and remains at any height at which it is placed. Brackets of various forms are also used (see *fig.* 65), which are so simple as to need no description. For those who desire a small light for reading or writing, and at a slight cost, a table lamp is attached by an india-rubber tube to the nearest gas-pipe (see *fig* 66). In this way a light may be brought as near to the party requiring it as can be desired, and the objection on the score of fatigue to the eyes or expense is done away with.

292. THE IMPORTANT POINTS to be attended to in all gas-fittings, are—1st, the accurate adjustment of the pipes so that no leakage occurs, which is often neglected by the workmen, and can easily be detected by the application of a piece of lighted paper to all the union-joints in succession, the escaping gas taking fire in a small jet. 2nd, the burning the gas at a proper pressure, which varies according to the kind of burner used. Fish-tail and bat-wing burners will take a greater pressure than the Argand; and, therefore, they do not mix together well, so that if they are both required, they should be supplied by different pipes, to each of which a regulator may be attached. This applies also to burners on different floors where there is a great height, for the pressure increases with the elevation. 3rd, in all cases the exact supply should be regulated as far from the burner as possible, and not by means of the stop-cock placed near it; hence it is that a stop-cock for each room or floor is recommended at par. 289, with a dial-plate and index-hand, which should be pointed to its proper figure on the plate according to the precise number of lights to be burnt. When the burner stop-cock is used as the means of regulating the supply, the gas is compressed and burns at a great waste, whereas if the stop-cock is turned at a distance the gas has time to expand so as to burn at a proper and regular pressure. With these precautions gas may be burnt with great economy and comfort, but without them the light is not steady and the ceiling is blackened by carbon, whilst at the same time a great waste of gas occurs.

SECT. 7.—COMPARATIVE COST OF ARTIFICIAL LIGHT.

293. From the remarks which have already been made, and from a careful examination of the following table, it will appear that the cost of Price's composite candle, of the size called "middling fours," and that of a medium bat-wing gas-burner are as nearly as may be the same—taking the average price of each to be 9d. per lb. and 4s. per 1000 feet. But, then, this same gas-burner gives seven times as much light, and therefore when *that amount is required*, it is seven times as cheap. But it must be recollected that this is not always the case, and that frequently the light of a couple of candles is as much as the eyes will bear; in such a case gas is not only not desirable in point of comfort, but it is also not very much more economical than candles, because a small fish-tail burner is the least which can be burned with advantage to the eyes, and that costs 1d. for five hours, while *a couple* of composites may be burnt for the same time for 2½d., two cocoa-nut

composites for 1½d., and two moulds for 1½d. Tallow moulds, therefore, may be made to answer the purpose, with an expenditure of one-half more than gas; but I am inclined to think, that when a *single* fish-tail burner is used, unless it is attached by means of a flexible tube, so that it may be placed on the table, it will not answer for writing, reading, or working, so well as two moulds, or two ordinary candles of any kind. Gas-burners all require a ground-glass shade to make them bearable to the eye, and in this way a considerable amount of light is absorbed and lost, while candles are not so brilliant as to require this precaution. On the whole, however, I am quite satisfied from long experience, that gas is far the most economical material for lighting purposes; and that, with proper precaution, it is not prejudicial to the eyes, except in this way, that from its cheapness we are all inclined to use it in too large a quantity, and that when the eye becomes accustomed to this it cannot do with a less amount of it or of any other artificial light. It is very important to obtain all our lights free from that flickering and unsteadiness which is so common with gas, as well as with bad candles; and this I have long thought an objection to gas-burners; but the beautifully steady light obtained by the use of Judkins' regulator, when combined with Dean and Dray's "sun" gas-burner, supersedes all necessity for any other precaution in this respect. The ordinary fish-tail burner is as steady as any ordinary candle, but not equal to wax or sperm. In point of comfort, when gas cannot be obtained, the moderateur lamp affords every requisite, but its expense will at all times be a serious objection in many families, and with them the composite candles will form a very efficient substitute. Price's make are the best of these; and their composite No. 4, at the lower price, is really a very efficient and pleasant candle, and, as the table will show, considerably cheaper. Palmer's metallic wicks, which for some years were all the fashion, are now rapidly going out of use, partly from the imperfect light given, and partly from their high price; as compared with their illuminating power. Moulds and dips of common tallow still maintain their place as a means of lighting at a low price; but their disagreeable smell, and the constant necessity for snuffing them, interfere with their use by those who can afford to pay for composites or colza oil. Camphine is intermediate in price, but is so uncertain in its composition, that I can scarcely recommend its adoption by any one who cares for his comfort or for the cleanliness of his person and furniture.

TABLE OF THE COST OF VARIOUS LIGHTS FOR FIVE HOURS.

	Price.	Time burning.	Price of each light.	Lighting power.
	s. d.	Hours.	d.	
Wax candle (middling fours size)	2 4 per lb.	54 per lb.	2½ ꝑ 5 hours.	Standard.
Sperm ditto ...	2 0 "	48 "	2¼ "	1
Patent Belmont wax ditto...	1 0 "	42 "	1¾ "	1
Ditto Belmont sperm ditto	1 0 "	40 "	1½ "	1
Price's best composite ditto	0 10 "	30½ "	1¼ "	1
Price's composite No. 1 ditto	0 9 "	38½ "	1¼ "	1
Ditto ditto long-fours size ...	0 9 "	36 "	1¼ "	1
Ditto ditto short sixes ...	0 9 "	42 "	0¾ "	0¾
Price's composite No. 4 middling fours ...	0 7½ "	40 "	0¾ "	0¾
Tallow moulds ditto	0 7 "	48 "	0¾ "	1
Tallow dips, 8 to the lb. ...	0 6 "	49½ "	0¾ "	0¾
Ditto ditto, 4 to the lb. ...	0 6 "	38½ "	0¾ "	1
Palmer's single-wick candle, 8 to the lb. ...	0 8 "	52 "	0¾ "	0¾
Ditto double wick, 6 to the lb.	0 8 "	42 "	1 "	0½
Ditto magnums, 1½ to the lb.	0 9 "	8½ "	5¼ "	4
Common oil lamp, single wick, burning sperm oil	0 9 per pint	44 per pint	1 "	1½
Ditto double wick	0 9 "	30 "	1½ "	3
Argand solar lamp, with seal oil	0 6 "	14 "	1¾ "	4
Young's vesta lamp, with camphine	0 9 "	12½ "	3½ "	5
Moderateur lamp, with colza oil	0 6 "	9½ "	5¾ "	6
Holmes' olefiant gas lamp, with his fluid ...	0 10½ "	42 "	1¼ "	2

TABLE OF THE COST OF VARIOUS LIGHTS FOR FIVE HOURS—*(continued)*.

	Price.	Time burning.	Price of each light.	Lighting power.
	s. d.	Hours.	d.	
Coal gas No. 4 fish-tail burner	4 0 ℘ 1000 ft.	250 ℘ 1000 ft.	1 ℘ 5 hours	5
Ditto No. 4 bat-wing ...	4 0 ”	200 ”	1¼ ”	7
Ditto Dean and Dray's sun burner	4 0 ”	166 ”	1½ ”	10
Child's or Price's night-lights, 12 to a box ...	0 6 per box	12 nights	0½ per night	0½
Camphine night-lamp ...	0 9 per pint	24 ”	0⅜ ”	0½

CHAP. VII.

WATER SUPPLY.

SECT. 1.—GENERAL REMARKS ON PURE WATER.

294. THE SUPPLY OF WATER to the house, is one of the most important points of consideration which present themselves to the builder. Without a profusion of this essential element, cleanliness, both personal and domestic, is unattainable; and in case of fire, its suppression can scarcely be reckoned on, in spite of those terrific fire annihilators which, indeed, sometimes increase the mischief they were brought to remove, as in the recent experiments at Drury Lane Theatre. The first thing, therefore, to be considered, is to secure an abundant, and, in fact, an unlimited supply at all seasons; and the second, to take care that the quality is good, and if possible, that there shall be a variety suited to every purpose, which can seldom be attained in perfection without the separate use of spring and rain-water.

295. PURE WATER is composed of two gases, oxygen and hydrogen, as may be demonstrated by burning them together in a closed vessel, the product being an amount of water exactly equal in weight to the gases previously existing. It may also, by the galvanic battery, be resolved into its gaseous elements; and in all gases it is composed of the same definite proportions of them, viz.—oxygen, by weight, eight parts; hydrogen, one;—or by volume, oxygen one, hydrogen two. Water is converted readily into vapour, called steam, which process, under ordinary circumstances, is called drying. By increased heat the steam is raised in temperature to a high degree, and will burst any known material used to confine it if the heat is sufficient. By diminishing or abstracting heat, commonly called cooling, the steam becomes again pure water; and by going on still further, ice, in which last process it also expands considerably. It boils at 212 and freezes at 32 degrees Fahrenheit. It is a very slow conductor of heat and electricity, and is almost incompressible.

296. WATER has a great tendency to absorb gases, and hence its presence in cisterns is frequently a means of warding off the deleterious effects of cesspools, &c. It is in this way that a pan of water will remove the smell of paint, and that it is able to contain so large a proportion of carbonic-acid gas in some cases, or of simple atmospheric air in others, causing the water to taste "fresh" or "brisk" to the palate. One hundred cubic inches of recently-boiled water, at the mean temperature and pressure, absorb of

	Cubic inches.
Sulphuretted hydrogen ...	100
Carbonic acid	100
Nitrous oxyde	100
Olefiant gas	12·5
Oxygen	3·7
Carbonic oxide	1·56
Nitrogen	1·56
Hydrogen	1·56
Atmospheric air	

All these gases are easily and entirely expelled by boiling the water, which accounts for its vapid taste when drunk as soon as cooled.

297. WATER is a solvent of most substances in nature, in some proportion or other. It has a strong affinity for the acids,

the more powerful of which can scarcely be obtained perfectly free from its mixture. It also has a strong attraction for the fixed alkalies and alkaline earths, and enters into the composition of all the compound salts, even in the case of those which are insoluble in it. It exerts a chemical action on most of the metals, some at the temperature of our air, as iron, potassium, &c., and others only at a higher degree. From these causes it seldom exists in nature without holding some foreign substances in solution, many of which are perfectly innocuous, and, indeed, advantageous to life, whilst others are highly injurious.

298. THE SPECIFIC GRAVITY of other bodies is denoted by their difference from the weight of water; and this being the most common fluid in nature, and its weight being also readily calculated, because a cubic foot of it weighs nearly 1000 ounces avoirdupoise, it is selected as the standard for comparison. A cubic foot of water at 60 degrees Fahrenheit, and with the barometer at 30 inches, weighs 998.217 ounces avoidupoise; hence, if we know the specific gravity of any body we have very nearly its weight in ounces avoirdupoise, which is a great convenience to the calculator.

SECT. 2.—IMPURITIES OF WATER.

299. THE IMPURITIES OF WATER are partly *inorganic*, and partly *organic;* the latter, again, being resolved into the *dead* and the *living.*

300. THE INORGANIC IMPURITIES are either suspended by water in motion, from which they are deposited when at rest, or else they are in solution. In either case they are alkaline, earthy, or metallic. Those in suspension are chiefly of a clayey or sandy nature; and although they interfere with the appearance of the water, yet they are, in reality, very slightly injurious in their effects on the animal economy. The substances in solution are those earths, alkalies, &c., which are dissolved in river and well water, together with the salts of lead and iron, which the water receives from the vessels in which it is contained. The first of these will be found to vary considerably, in the quantity found, in well and river water, and to be almost entirely absent in rain water. Lead in solution is caused by the action of water on the pipes and cisterns containing it. Mr. Hassall, who has done so much in other departments of the supply of food, has recently made a series of experiments on this subject, and the results to which he arrives are as follows:—

1st.—That lead in contact with water is oxidized in at least two, if not three ways: through the oxygen of the air; through the decomposition of certain substances present in water which contain a large quantity of oxygen, as the nitrates; and probably, in some instances, by the decomposition of water itself.

2nd.—That the oxide formed in these cases is the hydrated oxide, a compound sparingly soluble only in water, but which readily enters into combination with any free acid present; the ordinary acid contained in water being the carbonic, with which the oxide will form either a soluble or insoluble salt, according to the amount of acid existing in the water.

3rd.—That as pure distilled water, freed as far as practicable from oxygen, and enclosed in a sealed vessel, acts quickly and energetically on lead, the action depending most probably upon the decomposition of the water; rain, snow, or other water free from gaseous or saline impregnation, and thus closely resembling distilled water, acts in a similar manner. It is to be remembered, however, that the compound formed is the hydrated oxide of lead, which is but little soluble.

4th.—That in distilled water also included in a sealed vessel, from which the oxygen has been expelled by boiling, carbonic acid being subsequently passed into it, a soluble carbonate of lead is readily formed, the salt in question being generated still more quickly and abundantly when oxygen as well as carbonic acid is freely added to the water.

5th.—That while dried carbonate of soda does not act injuriously on lead, chrystallized carbonate of potash, the carbonates of magnesia and lime, and the alkaline or neutral bicarbonates of the same, exert a marked solvent action.

6th.—That solutions of the caustic alkalies, soda and lime, act in a most energetic and destructive manner on lead.

7th.—That while chloride of calcium exerts little or no effect, chlorine and chloride of sodium act very decidedly.

8th.—That certain salts, as sulphate of potash, phosphate of soda, and some others, principally sulphates and phosphates, appear to exert a protective influence on lead, as is shown by the slight oxidation of the metal, which takes place when these salts are dissolved in distilled water.

From these facts Dr. Hassall also comes to the conclusion, that rain water cannot with perfect safety be stored in lead cisterns, but that the salt formed is only sparingly soluble, especially when exposed to the air. He also considers that water impregnated with free carbonic or any other acid, as indicated by exhibiting an acid re-action, cannot be stored or conveyed in lead without great risk. Water also containing any of the following salts, he thinks unsafe when stored in lead, viz.—carbonate of potash, magnesia or lime, or any of the alkalies or earthy bicarbonates or nitrates, when in considerable quantity.

THE GALVANIC ACTION is also going on to a considerable extent in lead, and particularly on the bottom of cisterns, which are always corroded much before the sides, and also on the soldered joints, where two metals conspire to produce the galvanic current.

THE ADMISSION OF THE ATMOSPHERE is the most potent cause of all under ordinary circumstances, because of its permitting the free access of oxygen contained in it, and thus increasing the amount of oxide. Hence, the intermitting supply which admits air into the pipes is much more injurious than that at high pressure with a continuous stream.

On the whole, Dr. Hassall comes to the following conclusion, which should be carefully attended to by all those contemplating the fixing of any lead in the water-supply of their houses :—

"That while very soft water cannot be stored for a lengthened period, with impunity, in leaden vessels, the danger of the storage of hard water, under the same circumstances, is in most cases much greater. This danger, however, is to be estimated neither by the qualities of hardness nor softness, but altogether depends upon the chemical constitution of each different kind of water: thus, if it be ever so soft, and contain free carbonic acid, its action on lead will be great; whereas if it be hard, from the presence of sulphates and phosphates principally, and contain but few bicarbonates, &c., little or no solution of the lead will result."—Page 64.

ON IRON, water acts still more energetically than on lead; but as its salts, in small quantities, are actually tonic and wholesome, it is of little consequence to consider the precise quantity to be met with. In London, within the last few months, great numbers of new pipes have been put down, and as a consequence the water has been so full of iron in solution, as to turn some of the vegetable infusions black. This has given rise to very disagreeable suspicions of mistakes in the case of medicines made up by different druggists, some of whom used water passing through old pipes, while others were supplied through new ones, and hence the water varying in its proportion of iron produced no effect in the one case, and a very considerable one in the other. In the course of three months, however, all this has disappeared, and the water now supplied by the Lambeth and Vauxhall Companies from Thames Ditton, is not only free from iron, but is beautifully clear and fresh, and, as supplied, perfectly fit for drinking without further purification.

301. THE ORGANIC IMPURITIES consist of dead animal and vegetable substances, such as decaying leaves, water-plants, and also dead animals, large and small, which give off carbonic acid, carburetted, phosphuretted, and sulphuretted hydrogen, ammonia, and nitric acid; also, of living animal and vegetable productions, as fish, worms, larvæ of insects, and animalcules, as well as the algæ, or fresh-water plants. These are all rapidly developed under certain circumstances peculiar to each; some being the denizens of stagnant ponds, whilst others are peculiar to running waters. Deep wells, without the admixture of drainage water, are free from all these sources of impurity; and next to them comes the water of quickly running streams. Ponds, reservoirs, and cisterns are all prone to their development, and in proportion to the infrequency of the change in the water they contain. These living organic impurities cannot be considered as making the water more impure than before, but rather as indices of an amount of impurity requiring their presence as natural scavengers to get rid of it, which office they effect by absorbing into their systems and assimilating to their living substance the decomposing matters which would otherwise speedily be converted into those injurious gases which are enumerated above.

SECT. 3.—TESTS FOR IMPURITIES.

302. THE TESTS, or modes of detecting the various substances in solution, are as follows :—

For the DISCOVERY of SULPHATE or CARBONATE OF LIME or MAGNESIA, add a few drops of a solution of nitrate of barytes, when the fluid will become turbid, which turbidity, again, will be removed by the addition of a drop or two of pure nitric acid.

For the MURIATES, add a solution of nitrate of silver to the previously tested solution, which gives a bluish precipitate.

The SULPHATES or CARBONATES are also indicated by the turbid appearance on the addition of a solution of acetate of lead, which has little or no effect upon the muriates of lime, &c.

SULPHATE OF LIME is also detected by what is called *the soap test*, which is applied by means of a solution of soap in alcohol; when the sulphate exists in an undue degree, causing the water to be hard, it throws down a curdy precipitate, which is in proportion to the quantity of lime.

MAGNESIA is indicated when a milkiness is the consequence of adding a solution of phosphate of soda to water which has previously been treated with carbonate of ammonia.

FREE CARBONIC ACID is detected by a milkiness being produced by the addition of an equal proportion of lime-water, or by adding a small quantity of the superacetate of lead.

The tests for the more rare salts, &c., are too delicate for ordinary use, and they are of little interest to the householder for domestic purposes.

SECT. 4.—VARIETIES OF WATER FOR DOMESTIC USE.

303. FOR DOMESTIC USE, water may be considered under three forms—1st, *distilled or rain water*; 2nd, *spring water*; 3rd, *river water*; 4th, *pond water*; and 5th, *sea water*.

304. DISTILLED OR RAIN WATER, is either perfectly pure water, as in the case of that prepared by the chemist, or else the rain water which has been distilled on a grand scale by nature, and which has been raised from the earth in a state of vapour, and discharged in the form of rain. As it descends and approaches the earth, it becomes more or less contaminated with the dust, smoke, and other emanations always floating near her surface; and when collected from the roofs of houses, &c., it is also still further deteriorated in purity by the droppings of birds, the leaves and the dust lodged upon the surface, or in the gutters through which it flows. When, however, rain water is collected in clean vessels from a pure surface, in an open situation, away from the smoke of factories or towns, it is almost as free from mineral and vegetable contamination as the purest distilled water, but it always holds more or less ammonia in solution as well as of carbonic acid, and a trace of lime and soda. The quantity of rain falling in England is, on the average, about 25 inches per annum, which gives rather more than two cubical feet for each square foot of surface employed in collecting it. Hence, an enormous amount of this water may be obtained from the roof of one house during the year, and of the best quality for the purposes of washing, both personal and domestic. In estimating the collecting force of roofs, the level area only must be calculated at the above rate, and not the surface of the roof, which is often half as much again. Hence, the simple plan is to take the area of the ground-plan, and double the number of feet contained in it, which will be the amount in cubical feet of water that, *on the average*, may be collected in each year. Now, as each cubical foot contains 6¼ gallons, it follows that for each square of ground-plan 200 cubical feet of water may be expected to be collected in the year, representing 1250 gallons. And on this calculation the reservoir should be constructed, reckoning that we often have six months' drought, which will necessitate a *minimum* size, whilst the area with its resulting water will give the *maximum*.

305. THE APPARATUS for collecting this rain water consists of gutters and spouting ending in perpendicular pipes, which are described under the head of plumbing, at page 65. But more than these are required for storing rain water, and this is effected either by barrels or cisterns above ground, or, what is better, by underground tanks of brickwork lined with cement. The size of these may be increased to any extent, and the only question arises as to the power of collecting it and the demand for it when stored. The prudent plan in most houses is to calculate the annual fall of rain on the estimate given in the last paragraph, and then to provide for storing up nearly one-half of that quantity. Thus, supposing the house and buildings from which the rain is collected to stand on an area of 1500 square feet (15 squares), this will give 3000 cubic feet of water, or more than 18,000 gallons, of which it is prudent to store, we will say, between 6000 and 7000 gallons, or 1000 cubic feet, which will require a cistern measuring ten feet in every direction. This is perhaps more than is often done, except in those country districts where there is no other means of supplying water, having neither wells nor rivers, or, at all events, a very scanty amount from them. But where the expense is no object, such a cistern is a great advantage, inasmuch as it will give nearly 50 gallons a-day throughout the year, which is a quantity sufficient for the internal supply of any family. Where, however, the rain water is only required for the purpose of washing, less than a quarter of this supply is sufficient, and then a cistern containing from 200 to 300 cubic feet will be large enough—say eight feet long, five feet wide, and six feet deep.

306. But not only must the rain water be collected and stored, it must also be purified, or it will be unfit for use, except for certain purposes, such as water-closets, &c. This is effected by means of a filter, which acts upon the water partly by mechanically separating the solid contents, and partly by affecting its composition. Gravel and sand, or a porous stone, together with some substance to prevent their too close wedging together, as the twigs of trees, have constituted the best mechanical filters: and animal charcoal is, without doubt, the best chemical remedy against the decomposition which takes place in rain water. It produces its good effect from its power of

absorbing the gases which are given out. There are various methods of applying filtration to rain water; but the best mode is to construct two tanks on different levels, one a comparatively small tank, which is best made of slate, and placed above the level of the ground; and the other a large store-tank of brick, lined with cement, below the surface. (See *fig.* 46.) Above this there is a slate cistern (*fig.* 45), easily capable of being cleaned out, and divided horizontally into three water-tight compartments, also of slate, the top one communicating with the bottom by pipes fixed at each end outside the cistern, and secured by means of Jennings' washers, and having also a waste-pipe in case of overflow from sudden storms. The middle compartment has a pipe (C), which discharges its water into the tank after it is filtered; and in its side is a long aperture which admits an oak tray, with a surface of the same dimensions as the cistern, but with a bottom of some porous substance, as fine perforated zinc or porous stone. The upper cover of the lowest compartment (B) has several large holes cut in it, so as to remove nearly the whole of its surface, but to leave sufficient to support the wooden tray, and yet to prevent any large escape of unfiltered water, which also is further prevented by the sand, &c., in the filter filling up the space. The oak tray should also have a flat shoulder adapted to the side of the cistern, and thus in practice a very slight leakage only occurs. In this tray layers of coarse gravel, charcoal, and fine well-washed sand are placed, the coarsest being the lowest, and it is then pushed into the opening in the side of the middle compartment lying upon the shelf (B), and receiving the unfiltered water from the lowest compartment (D) through the openings in its top (B). The water then passing upwards through the filter enters the compartment (E), and flows out through the pipe (C) into the tank below. It is prevented from mixing with the water of the first or highest division (F), by the water-tight bottom (A), and thus all the water is thoroughly filtered and purified by *ascension*, except the few drops which escape by the sides of the wooden shelf containing the filtering materials, and they may be made either to run into the waste drain or else collected in the main tank, according to the value of water at the time, or to its probable scarcity. A filter made on this plan has been in operation more than two years without requiring to be cleaned out, and doing its work most efficiently; but as charcoal requires occasionally to be renewed, if it is to be of much service, it, of course, has not exercised much power in this case. The drawer may be so easily removed that it can be taken out and refilled in a few minutes, and then by introducing the hand through the openings in the cover (B), the dirt collected at the bottom may be removed, and the whole of the cistern thoroughly cleansed. It is a most efficient apparatus, and as cheap as possible, consistent with thoroughly performing what it professes to do. Many filters are mere apologies, and are utterly useless; but this will filter a gallon a minute or more, according to size, for months together if wanted.

307. RAIN WATER, so treated, is highly advantageous in every point of view, being useful and wholesome for cookery, and economical in washing, for which purposes it is very superior to hard water derived from wells or rivers.

308. THE COST of collecting and storing rain water is mainly dependent upon the cisterns or tanks, which are the only additional parts of the apparatus, inasmuch as rain-water gutters and pipes are necessary in all cases. The cost of the slate cistern, as described, is about £4, to which must be added that of the underground tank, which, if made to hold 250 gallons, will take about two-thirds of a rod of brickwork, costing, we will say, with the excavating and cementing, about £9; in all £13. The larger cistern will cost nearly double this sum, and therefore will not be available for those who cannot spare the money, nor will it be desirable, except in the particular cases, above alluded to.

309. WELL OR SPRING WATER is generally *hard*, that is to say, it is impregnated with numerous earths and saline substances in solution. It is derived from the rain water percolating the various strata, on the surface of some of which it is collected and stored up, whilst from others it runs in the shape of springs, which well up from the earth, in consequence of the pressure of a head of water above their level. In their progress through these strata they acquire the salts which they contain; but as they are removed from the contact of light and air, they are not contaminated by the presence of vegetable or animal beings, nor do they usually hold dead animal or vegetable substances in suspension. They are, in fact, more pure than any other water but clear rain or distilled water, and hence they are highly-prized for drinking, though they are generally too hard for washing, brewing, boiling, &c. The degrees of hardness are indicated by numbers from 1 to 60 degrees, which latter is an extreme degree of inorganic impurity.

310. These waters are found at various

depths, but in some situations no boring has yet been able to reach a vein or pound of water, although carried to an enormous extent. When this boring taps a vein of water, the head of which is above the level of the surface, the water rushes up through the tube made by the boring instrument, and flows sometimes to a considerable height above it. Wells procured in this way are called Artesian, and sometimes a very large supply is thus obtained, but the expense is so great as to forbid their adoption for private houses.

311. The modes of well-digging and the expenses are indicated at page 28. When the well is made it requires a pump to be fixed, which should be of iron or wood; but the nature of its construction will in great measure depend upon the depth of the well; for which see page 61.

312. River Water is the main source of supply to London and some of our large towns. Until lately the impurities in the water from this source were dreadfully great, and the diseases to which they gave rise were such as to swell the bills of mortality in a frightful manner. At present the water companies are gradually introducing a more perfect system, which must be completed during the present year, 1856. By the Act of Parliament they are obliged to take their water from the Thames above Thames Ditton, and to filter it and store it in covered reservoirs. All the companies have not yet completed their works, but in those which have, the water is delightfully sweet, bright, and free from impurities; and though the rates are increased they appear to be only raised in proportion to the outlay, which has been enormous.

313. At present the supply from the London water companies is intermitting, and at a pressure which varies a good deal, but seldom reaches above the first story. In many of our provincial cities, however, it is now continuous, and reaches the tops of the most lofty houses. In these, cisterns are quite unnecessary, and the whole house may be supplied with water by pipes laid on, though in case of bursting the effects are very disagreeable. When the supply is only at short intervals, a cistern is absolutely necessary, which may be either of lead or slate, according to the purpose for which it is intended. In those for water-closets, or bath cisterns, lead is all that can be desired; while for drinking or cooking, slate is very much to be preferred, for the reasons given at page 129.

314. Pond Water varies greatly, both in the nature and extent of its organic as well as inorganic impurities. Sometimes ponds are almost wholly dependent upon the surface-water of adjoining fields, without any filtration through gravel or other material. In such ponds the vegetable impurities are very great, as well as, in many cases, the collections of animal matter, owing to their being used as convenient spots for concealing dead dogs and cats, rats, &c. In other instances ponds are fed by small rivulets, which sometimes flow from the sides of hills, where they break out from the points at which a porous stratum crops out above an impervious one. Here there is often a large amount of mineral matter in solution or suspension; and, consequently, pond water is sometimes hard, though on the average less so than river water. Evaporation also goes on to a great extent in large ponds, and this adds greatly to the per centage of the impurities of all kinds, since the water removed is entirely free from them, whilst that left becomes increased in strength.

315. Sea Water consists of the following salts mixed with water—viz., lime, magnesia, and soda, and also sulphuric and muriatic acids, with small quantities of iodine and bromine. The proportion of salts being 1 in 30, or thereabouts. Consequently, sea water is very hard and very unfit for domestic purposes. By distillation a tolerably pure water may be obtained, but still containing some little quantity of muriatic acid, which is highly volatile.

316. For external use in bathing, it is, however, highly beneficial, being exceedingly bracing, in consequence of the salts which it contains, and also alterative, from the iodine and bromine which enter into its composition.

Sect. 5.—Distribution and Purification.

317. The Mode of Distribution of water through the house is described under the head of plumbing, at page 60; and the heating of it for domestic purposes, as well as baths, at page 68.

318. The Purification of Rain Water has been treated of at length at pages 140-1; but it is necessary also to enter upon a consideration of the best mode of treating water when it is delivered for the use of the house by a water company in an impure state. Thanks to the efforts of the sanitary reformers, this is now seldom the case; but still it does occasionally occur, and impure water from brooks is also sometimes the only supply which can be obtained in rural districts. In such a case it is not well to filter the water on the large scale, and then to store it up as advised for rain water; but it should be filtered as fast as it is wanted, a gallon or two being the most that should be reserved ready for use. In this, as in the case of rain

water, filtration by ascension is the best mode, because it leaves the gross impurities at the bottom of the reservoir, whilst the water percolates upwards through a comparatively clean stratum of filtering matter, which may be so much the more actively useful, as it is not clogged with the mud and organic matter of the water. The ordinary cistern is of stoneware, divided into three compartments, the middle one being occupied by a porous stone, or by sand and charcoal. There is usually a hole in the upper aperture, that is filled by a sponge, which should be occasionally removed with the worst part of the foreign matter remaining in its meshes. An exceedingly useful filter is made by hollowing out a piece of porous stone into the shape of a jar, and then placing this within a larger vessel containing the impure water; the stone permits the clear fluid to pass into its cavity, from which it is drawn off by a pipe and cock passing through the walls of both vessels. This plan is sometimes adapted to filtering on the large scale, by increasing the number of filtering-stones and covering them in so as to make them water-tight, except through their pores; then fixing a tube to them and sinking them in the impure water they at once filter it, and allow it to escape through their several pipes. But, although filtration removes some of the worst impurities of water, it does not remove all, and those in a state of perfect solution are left unaffected by it. It is therefore, at best, a poor remedy for defective water.

319. Water may be conveyed from one situation to another by pipes either of iron, wood, gutta percha, or earthenware, placed at an inclination, however slight, so as to allow it to find its level by the force of gravity. Lead is objectionable, as shown at paragraph 300, and should never be used when water is wanted for drinking or cooking. When river water is required to be raised to the house, it may be done by means of its own power, if there is the slightest fall within reach. By means of this agent a water-wheel is driven which works a pump, and thus forces the water up to the higher level. In this way, where there is plenty of water, there is never any difficulty in meeting the demands of a house at any moderate distance, but in every case a great part of the water is expended in turning the wheel; and it cannot therefore, nearly all, be forced up to supply the house. The most economical mode of effecting this object, where there is only a small stream of water, is by means of what is called an hydraulic ram.

CHAP. VIII.

PRESERVATION FROM FIRE.

Sect. 1.—Preservation from Internal Fires.

320. Buildings of all kinds are liable to fire from two causes—1st, from internal sources; and 2nd, from their proximity to neighbouring buildings, which may conduct it to them. Each of these sources of fire, therefore, must be separately guarded against, excepting in fire-proof buildings, which defy them both.

321. In order fully to guard against fire from within, that is to say, to make buildings fire-proof, a great expense must be incurred, inasmuch as they must be constructed almost wholly of iron, stone, or brick, and lime. Under certain circumstances this is no doubt desirable, as, for instance, when large numbers are collected together in houses of many stories, such as the Parisian and Edinburgh houses, or the modern model lodging-houses. Here the danger of fire is so great, and when it does occur, the destruction of life is so awful, that nothing short of fire-proof materials can be considered sufficient to meet the risk. Two methods are now adopted for this purpose, the ordinary Parisian plan, and that of Messrs. Fox and Barrett. The French plan is not so complete a protection as the English one above alluded to, but for all ordinary purposes it is fire-proof. It consists of the usual naked floor, which should not be boarded as with us, but they proceed as follows: strong batten laths are nailed up to the under sides of the joists, as the plaster laths are with us, but they are much thicker and stronger than ours, and are placed so far apart, that not more than one-half of the space is occupied by them. They must be firmly nailed, after which a platform of rough boards is strutted up

from below, about an inch beneath the lath. This being done, mortar, consisting partly of plaster of Paris, is poured in from above through the laths, and fills up the space between them and the platform, as well as an inch deep over them; and this makes a strong and solid table of lime three inches thick, and held together by the laths. A similar but rather stronger floor is made on the top of the joists by means of rough split timber bedded in mortar of the same quality, and on this tiles are laid, forming the usual floor of the Parisian room. In this way is produced a floor which would scarcely burn if fire were expressly introduced for the purpose; but as in these houses no bond timber or wall plates are used, there is little chance of any such an event; and even when wooden floors are employed, they are added on the top of these lime floors, and would burn to a cinder before they would communicate their combustible property to the joists *below*, guarded by two inches of lime. Staircases are treated in the same way, although built of wood. Messrs. Fox and Barrett's plan consists of iron girders, either cast or wrought (see *fig.* 64), which gives a section of their floor, in which *a a a a* are iron girders, supporting a layer of slate by their lower lips, and this material again carrying a thick layer of concrete, embedded in which, at intervals, is a wooden joist (*b b*), upon which are nailed the flooring boards in the usual way. This latter plan is still more free from danger than the French plan, and quite equal to iron girders with brick arches between them, which are not applicable to houses of the ordinary construction, on account of the thrust upon the walls. Mr. Bardwell, who has drawn attention to this plan in his little work entitled "Healthy Homes," gives the following comparative estimate of its cost, and that of the common timber floor, which I believe to be quite correct at present prices, though both perhaps are a little above the *average* price at which they may be executed.

COMPARATIVE ESTIMATE of FIRE-PROOF and ORDINARY FLOORS in a floor 18 ft. by 16.

	Per floor.			Per square.		
	£	s.	d.	£	s.	d.
Timber floor, of the cheapest form	15	5	7	5	6	0
Ditto, superior quality	20	9	1	7	2	0
Fire-proof floor, with cement surface ...	17	3	0	5	19	0
Ditto, with 1-in. boarded surface	20	9	3	7	2	0
Ditto, with 1½-in. ditto	21	9	8	7	9	0

Mr. Bardwell makes some remarks on the use of iron, which, as coming from a practical architect of great experience, are very valuable:—"Much misapprehension exists as to the variations of length due to the expansion and contraction of iron, and therefore a prejudice exists against its use in floors and roofs. Some years ago, I had occasion to put a roof of a peculiar construction upon a picture gallery, and I proposed to do so with cast-iron girders. The proprietor begged of me first of all to consult an eminent engineer on the subject. On meeting this latter mentioned gentleman he observed, that he could make a railway bar travel from London to Brighton, simply by its own expansion and contraction; and advised, that if I used iron girders for the roof in question, that I should only fix one of the ends in the wall, and leave the other free to move on a roller. I did not carry out the gentleman's suggestion, but fixed both ends in the same manner, as if it had been a trussed girder of wood, and the roof is now apparently perfectly unaltered after this lapse of years. The masterly manner in which Mr. Dawkes has carried the roof of Exeter Hall (a span of no less than 75 feet) on arched girders of boiler-plate iron, is another instance of the imperceptible alteration undergone by iron girders in the roofs, and, consequently, still less in the floors of rooms. No one, therefore, need hesitate in the free use of iron in such situations. In fact, the expansion of iron, at 32 degrees Fahrenheit, to the boiling point of water, 212 degrees, is only about 1-900th of its length; and as an ordinary room rarely varies more than 20 degrees from the mean temperature, the expansion will not exceed .08 inch in a length of 20 feet, even if the iron is freely exposed to the heat of the room, which however is not the case, as it is generally covered with some non-conducting material. In short, the effect of expansion and contraction may practically be disregarded in this climate." It appears, therefore, that iron girders may be used with perfect impunity; and if so, and the price is not thereby increased more than the sum mentioned by Mr. Bardwell, there can be no valid reason why all our buildings of any height should not be rendered beyond the reach of this dangerous element. Mr. Bardwell calculates as follows:—"A house of 20 feet frontage may be fire-proofed for £50 or £60; a house of 30 feet, for £70 or £80, and so on; while the saving of the insurance will be more than sufficient to pay the interest of the additional expense of saving the house from fire. Suppose a house, 25 feet in front and 50 feet deep, valued with its furniture and contents at £3600, with the insurance at 8 per cent., together with the tax of-

1s. 6d. upon each £100, would amount to £8 2s. per annum. This sum is the interest of £162 at 5 per cent.; whereas, a house of the above dimensions may be secured from fire for about £100; thus, not only effecting a saving in point of expense, but the security of life is thrown into the bargain. But the comparative expense is always proportionately less according to the greater value of any house with its furniture and its contents. There are many shops and warehouses which contain £10,000, £20,000, or £30,000 worth of valuable goods within a small compass; the expense per cent. is in such cases reduced to a mere nothing. And, after all, who can give an adequate estimate of the value of life itself, added to *security without risk, and sleep without fear.*"

322. But as it is not always desirable or possible to build on the above plan, the next best thing is to adopt such precautions as will render the ordinary modes less inflammable than they now are. It is generally necessary to divide the upper rooms of houses in a different way to that adopted with the lower ones, and in order to effect this, timber-trussed partitions are introduced (though iron might be used instead). These are generally lathed and plastered only in England, but in France they are filled in with a stone core of rubble. Almost any hard material will serve the purpose, so that it is incombustible, and that it is of such irregular forms as to allow the plaster or mortar to run through and thus form a solid mass. In all cases chimneys, and stoves with their flues, should be confined to walls of brick or stone, and no flues should be nearer to timber of any kind than the thickness of a brick. Battenings also should, as far as possible, be avoided, as they only form the early food of fire, which would, perhaps, never have begun had the walls been perfectly destitute of wood.

323. Wherever iron flues pass near woodwork, the latter should be well guarded by plates of metal, and some space should intervene between the two so as to allow a current of air to pass through. If the pipe must be supported, it should only be by thin, though strong, arms of metal wire, by which the heat is prevented from being communicated in sufficient amount to raise the temperature of the wood to a dangerous height. Guards of iron should also be fixed on all fires which are left burning with wooden floors to the rooms in which they are situated.

Sect. 2.—Prevention of Fire from External Causes.

324. Fires from Without are guarded against chiefly by party walls, which are so fully specified in the Metropolitan Buildings Act, that it is scarcely necessary to allude to them here. In the country thatched roofs are a fertile source of communication, and if a fire happens within a few hundred yards of such a kind of roof, it is very difficult to prevent its spreading. But buildings covered with wood or felt are almost equally prone to catch fire; and though their cheapness may, perhaps, lead some people to use them in isolated buildings, yet near dwelling-houses they are scarcely at any time safe.

325. When water is supplied in large quantities, either at high pressure or by means of a forcing-pump, it is very easy to fix a small pipe and hose at certain places on the landings where the water is laid on, and then any moderate fire may be extinguished, as soon as it is discovered, by their means. A gutta-percha tube costs very little, and in districts where there is no fire-engine would often save the loss of the house by fire.

CHAP. IX.

PROCEEDING TO BUILD.

Sect. 1.—General Remarks.

326. In the preceding chapters I have endeavoured to describe in detail the nature of the materials of which our houses are composed, with their prices, and the mode of working them, as well as the wages paid to the journeymen, or the price per piece if paid for in that way. In the present chapter it will be necessary to combine these various elements, and to show how the materials and men may be used in the best and most economical way, so as to produce a comfortable house at as low a cost as is consistent with its durability, and also with a due regard to the interests of the workmen themselves. No one should desire to screw down a workman below the price at which his labour is valued in the market, and if he tries to do so he is sure to be outwitted; but at the same time these men are fully aware that an occasional interval of light work is of vast service to their constitutions, and they will therefore endeavour to prolong "the job," if allowed to do so, because they know and feel that light work takes less out of them than the reverse, and consequently they desire to keep on as long as they can with a mild and lenient master. It is not, therefore, that they make anything in point of money by idling, but they renovate their frames, like a horse turned out to grass, and are thus prepared for future more severe efforts. Such is the most charitable view to take of their lazy habits, for it is notorious that journeymen will do nearly twice as much when paid by the piece as they will at day-work. From these remarks it results that, as far as possible, I should advise journeymen to be paid by the piece rather than by the day.

327. Contracts for a whole house are only practicable when an architect is employed, and therefore they may here be dismissed; but partial contracts may often be advantageously entered into, either with a builder for materials and workmanship, or with a set of journeymen headed by one of their body, for the labour only. Thus, a builder will contract to put up a carcass, consisting of walls, naked floors, and roof, which he may do according to a design prepared by himself or by the proprietor, without much danger of fraud, if the latter overlooks the work, and sees that the bricks are properly laid, and that the timber is of the quality contracted for. It is in this latter point that he will be most likely to be taken in, as well also, perhaps, as in the bricks, which are often laid with very bad mortar, or with a bad bond. It will, therefore, be better, in general, to purchase the materials of respectable timber merchants, &c., and then to pay for labour at a fixed price for the whole, or the brick-laying or stonework alone. In the section on the stone-mason I have observed, that his work is better contracted for together with the stone, and as there is not much difference in the quality of that from the same quarry, I believe this will be found to be always the best plan. After the carcass is erected, the several parts may easily be finished in detail under the heads which are given below, and nearly in the order in which they are arranged.

328. The Plan of Payment by Measurement and Value is a very extravagant one, and is now rarely adopted. It will always bring the cost of a house up to one-half at least more than the nett cost, even reckoning the labour and materials at a high rate (see par. 23).

Sect. 2.—Choice of Materials.

329. I have remarked at page 8, that, upon the prices of material in any particular locality, will, in great measure, depend the style of house which is to be built. But further than this, the proprietor has to decide as to the *quality* which he shall employ. He must recollect that, for his own use as well as for that of his successors, he must not only look to the present but to the future, and therefore his materials must be of such a durable nature as to supersede the necessity for their constant repair, which cuts a large hole in the rental, if the house is let, or in the proprietor's purse, if kept in his own hands. When a house is substantially built of *hard* bricks or good freestone, and roofed with slate or hard tiles, the timber also being of a sound and durable quality, it ought not to require any outlay for many years to come. With the greatest care which can be exercised a sparrow will build in a gutter, or an extraordinary wind will blow off a few slates, but, barring such events as these, nothing but paint ought to be required for at least twenty or thirty years after building. Hence, the constant annoyance and expense of repairs is avoided by a selection of the very best materials, but very often at rather a high price. When houses are lofty, the bricks should be proportionately hard and sound, as the walls have often to bear an enormous weight;

but when they are low, any bricks will be strong enough for the walls; and the reason why hard bricks are as much required in them as in other cases is, that they absorb water equally in all. Whenever therefore hard and well-burnt bricks can be procured, they should be selected, even though unshapely and of a bad colour. Sandy and spongy bricks are equally to be rejected, and if no others can be obtained they will require to be cemented or stuccoed. For low houses, if not more than thirty feet in height, the roughest place-bricks will suffice, provided they are well burnt and hard in quality, and that they are put together with good mortar *fresh made*. But it must be known, that though there appears to be a great saving in the use of low-priced rough bricks, yet there is a great waste of lime and sand, as well as labour, when they come to be plastered, as their inequalities of surface are exceedingly great, and require large masses of plaster to fill them up. If, therefore, the proprietor can afford the first outlay, he will do well to avoid place-bricks for all but the very rough internal work; and even then, hollow bricks of good quality may generally be obtained at a price nearly as low, and far superior in the work they make. Indeed, the walls made with these hollow bricks are often very true in the face, and sufficiently good for outside work in all but superior fronts. But with regard to bricks, they vary so much in different localities, that scarcely any description is applicable to more than a very limited district. Nevertheless the previous remarks may guide the proprietor in his selection. The lime for the walls should always be stone-lime; and also, if possible, for the coarse stuff. With regard to timber, I have already, at page 15, indicated the kinds of timber suited to the various parts of houses; and with reference to all other materials, the several guides which I have given under the respective heads, must suffice to indicate what is best suited to the purposes for which they are required.

SECT. 3.—FOUNDATIONS, WELLS, &c.

330. THE WELL is the first thing to be attended to, and should always be sunk before even the foundations are laid, for the reasons given at par. 64. In many cases, especially in country districts of a high level, water can scarcely be obtained from any certain spring, and in such situations much money has often been sunk in building, when it has *afterwards* turned out that no spring water was available. The surface-water, or that from a pond, has been used for the mortar, and the sinking of the well has been postponed until the well-sinker could find time for the job, or too often wilfully, in order that the proprietor should be committed to the spot, by having buried his money there. In many such situations water cannot be obtained at all, and frequently only by expensive forcing-pumps, worked by wheels at the surface, or even by steam-machinery. In the chalk districts this precaution is particularly needful, as they generally present more than the usual difficulties to the well-sinker, though the material itself is easily worked. In gravelly soils, on the other hand, water is almost always met with at the bottom of the bed. The great point, however, is to insist upon the completion of the well before anything else is done, or, at all events, before any materials are actually buried in the foundations. Few wells take more than a week or ten days in sinking, and as it is not necessary to fix the pump before going on with other work, the delay cannot be of much importance. In most cases a well three feet in diameter will suffice, and the average depth may perhaps be calculated at 25 feet, at 2s. 6d. per foot for labour, which, with 1250 bricks and six curbs, will bring the nett cost of such a well to about £6, exclusive of the pump and covering in (see para. 68 and 82). Oak slabs are often used for this last purpose, but as they are liable to decay in course of time, they are not so desirable as a slab of slate or stone, which may be obtained for very little extra, the cost not being more than enough to bring the whole up to £7. If possible, the well should be sunk under the back-kitchen or scullery, as the pump may then easily be placed under cover, and free from the danger of freezing in severe frosts. Wooden pumps and trees are much used in some situations, on account of their low price, and their freedom from the risk attending upon leaden pipes, but iron pumps are now fast superseding both. When wood is used, the pump must always stand directly over the well.

331. THE FOUNDATIONS are next to be laid; for this purpose the whole ground-plan of the building should be set out as follows:—Desire the carpenter to prepare a large rough square, consisting of two strips of wood nailed together at a right angle, and kept so by a cross strip; each of these strips should be about ten or twelve feet long, and should have the feet and half feet marked on them in white paint. Then, with the plan in hand and this rough square, with the addition of a measuring-tape, the whole ground-plan may be staked out, setting the stakes at the outside and inside angles, and omitting all window and doorways, the ground for which must be exca-

vated as well as the rest. All cross-walls should be set out, and bows or projections as well. When this is done, the excavator has only to remove the earth to the required depth and width, allowing for the angle at which the particular soil will stand, and then the bricklayer or mason sets to work to commence his foundations—the excavator finishing by well-ramming the bottom of the trenches with a proper rammer. At the same time with the trenches for the foundations, those for the drains should also be got out and rammed, as the principal internal drains should be laid and built in with the foundation walls, so as to avoid the collection of water which would otherwise occur, and also to supersede the necessity for disturbing the foundation stones in getting the internal drains through them. At the same time the main external drain should be finished, which will receive the internal drains, and keep off all danger of flooding either the exterior or the interior (see par. 82).

THE FOOTINGS are the lowest courses of the foundation, spreading out towards the bottom until they reach a width double or treble that of the walls, according to the nature of the soil. Underneath them concrete is generally laid, of a thickness varying from a few inches to two or three feet or more (see par. 44). In good foundations this will scarcely be required, and a thin layer of broken crockery or bricks, or of the "riddlings" of lime will often suffice, well "grouted" with thick mortar and water. On this lay the first or lowest course, which should, if possible, be of stone, in one block (see *fig.* 5* and par. 68). When the footings are completed, and the walls are brought up above their level, a small 1½-inch or 2-inch drain-pipe should be placed all round the external wall in the angle between the highest course of footings and the wall (see *fig.* 5* A A), and these pipes should be covered with broken bricks or rubble, over which the earth should be well rammed (see par. 82). When this is done, and the wall is carried up to the level of the lowest floor, the foundation is completed and the carcass begins. If there is a basement story the foundation only reaches up to its floor, but in cases of ordinary cellars they are generally included in the foundation. For these cellars brick or stone arches are generally employed of a half or whole brick thickness. Centres must be prepared and fixed by the carpenter for these arches to be laid upon (see pars. 69, 70). As soon as possible the earth should be thrown back into the trenches and well rammed, and what is not required should be carted away, as its presence on the ground interferes with the operations of the bricklayers and their labourers. I have omitted to state that after the footings are completed the foundation wall requires to be compared again with the plan, and the angles, &c., should be carefully set out, as the wall above the footing should be either exactly of the same width as that above ground, or else a definite proportion of a brick wider on each side. Its surfaces must, therefore, either be exactly in accordance with the plan, or else wider by the width of a whole or half-brick. In well-prepared plans a regular basement or foundation-plan is drawn; but in amateur building this is often neglected, and the above precaution requires attention.

SECT. 4.—THE CARCASS.

332. THE CARCASS, as already mentioned, commences with the level of the lowest floor; and as it is not usual at this stage to insert the naked timbers, the wall is proceeded with, first setting out the doors, and if there are any windows down to the ground, them also. At this stage the external bricks or stonework become visible, and if they differ from those used inside they must at once be laid, or if there is any highly-finished brickwork, it is necessary to set out the joints by the jointing-rule, so that they will match in the piers on each side of the windows, &c. This is effected by closers (par. 76, 77), which may be so introduced that the bond is preserved throughout—especially in Flemish bond—which, for this reason, is often preferred. As soon as the work reaches the level of the window-sills, the jambs must be set out, and if the brickwork has been correctly begun there will be no difficulty. Grouting must now be carefully attended to (par. 78), and, indeed, all the directions given under the 2nd and 3rd sections of chap. iii., according to the materials used. The carpenter will not be required until the walls are raised half the height to the first-floor, when a scaffold is usually wanted by the bricklayer, and there a layer of bond timber is often introduced, though the use of this is now often superseded by hoop iron, and especially the patent hoop-iron bond of Mr. Tyerman, the price of which being only 7s. per 1000 feet, it is much cheaper than timber. It has claws at certain distances which lay hold of the work and prevent its slipping through the mortar, and it is consequently much stronger than the ordinary iron. Where narrow piers are introduced, a piece of bond timber should be built in across the middle, by which the piers are kept at proper distances, and are prevented from giving way. In brickwork wood-bricks are often built in at intervals round the base of the room for the skirting-

board, and also up the jambs of windows, doors, &c., for the linings; but I believe they are better omitted, and the linings fixed with plugs driven into the joints after the work is thoroughly set. Flues and chimney-breasts are now also to be set out, and as the flues are carried up they should be well pargetted. When the walls arrive at the level of the first-floor, the carpenter is required to lay his joists; after which the bricklayers or masons proceed again with their walls, until the next floor or the roof stops them, when the carpenter is again called in, and after the roof is put on, the chimneys are carried up, the lead gutters are put in, and the slates or tiles are put on, followed by the plumber with his lead pipes, &c., and his rain-water pipes, after which the carcass may be said to be complete.

333. IF THE CARCASS IS CONTRACTED FOR as a whole, there is no difficulty whatever; but if the materials are found, the best plan is to contract with the bricklayer to find labour at so much per 1000, counting the bricks brought on the ground.

334. The carpenter also will readily engage to find the whole labour for naked floors, roof, gutter bearers, bond timber, wall plates and lintels at a fixed sum, which he can readily do when he knows the size of the whole house, and the form of the roof. The prices for these several parts will be found given at pages 47 and 48, so that the master will have no difficulty in arriving at the proper sum to pay. Thus, suppose there are 30 square of naked common floors strutted, and 12 square of span roofing with framed principals, beams, king posts, purlines, braces, and common rafters, including pole plates and ridges, trusses 9 feet apart, and there are also 20 feet of fir, in bond, plates, lintels, &c., as well as 35 feet of gutter bearers, the cost for labour only of carpenter's work would be as follows:—

		£	s.	d.
30 square of naked floors, as above	at 3s.	4	10	0
30 square of strutting	„ 1s.	1	10	0
12 ditto of roofs, as above	„ 10s.	6	0	0
20 feet cube of fir in bond, &c., ...	at 4d. per foot	0	6	8
35 ft. of gutter bearer, at 3d.	„	0	8	9
		£12	15	5

This is, perhaps, rather a high estimate of the value of this part of the work, taking labour alone into consideration; but when it is considered that there is a good deal of trouble in setting out roofs and floors, and in lifting heavy timbers, as principals, &c., it will not appear so much. A great deal of time is wasted by the carpenter in carrying small lintels and pieces of quartering to the bricklayer for the purpose of fixing his arches, and all this has to be considered. Regular centring is estimated differently, but for rough arches these are not required.

335. The plumber's work should be paid for separately, and it is seldom well to contract for this part of the building, as it is of great importance to have it well done, not only with good materials, but the joints well soldered, or rolled, if for flats, and carefully levelled. Lead is charged by the pound, and if attention is paid to the thickness, and to the fact of its being of the proper weight, the quantity charged can easily be checked by multiplying the number of superficial feet by the number of pounds per foot.

336. The slating or tiling is better done by finding the materials, and contracting for the work at so much for the whole, which the workman can always measure beforehand just as readily as afterwards, and much more satisfactorily than disputing about the measurement when it is done.

337. At par. 71 I have remarked, that what stone, if any, is required for the carcass should be contracted for with the quarryman, and paid at a price per foot cube or running, and that it should not pass through two hands; or if this is not practicable, then let some respectable master-mason undertake the stonework in the same way. When these several parts are thus concluded, the different rooms may be separately finished at leisure. After the roof is thus covered in, it is usual to give a dinner to the workmen engaged.

SECT. 5.—DETAILED CONTRACTS FOR FINISHING.

338. At par. 112 I have advised, that all flooring-boards should be planed and stacked, and the sashes and doors, with their frames, should be cut out and tried up as early as possible after the plan is decided upon; and, therefore, it may be unnecessary again to allude to this subject in this place. It is, however, a very important point, as the soundness of the work in great measure depends upon it. Supposing this all done, it will be very easy for the joiner to proceed with his fitting and fixing of the work in detail as required, and he will thus be able to keep pace with the plasterer. The gas-fitter, bell-hanger, and plumber should also fix what pipes are necessary for their work before the plasterer begins, and the openings for ventilators should now be settled. When all this is attended to, the latter workman may be asked his price for each room or

floor in succession; and this he can give *before-hand* perfectly well, because there are the walls to measure. Wherever this is the case the price should be fixed at the time, and not left till the whole is done, and thus much annoyance will be spared. Nothing is more easy than to measure the surface of the walls and that of the ceiling, which, of course, corresponds with the floor, except in the case of those which are partly formed in the roof, and consequently the cost of each room for labour can easily be obtained. For lime and sand 1d. per yard will be found to be about the average cost of each, which added to the labour will give the price per yard of the plastering of the walls. To the ceilings must be added the cost of laths and nails, which may be set down on an average at about 6d. per yard—more or less. according to the lath and locality. Before the walls are floated the joiner must fix his angle-beads, and his door linings, and sash-frames; but the plasterer always, in the first place, pricks up the ceilings. Cornices are estimated at per foot super., whether the labour only or the whole work is to be valued; but there is no objection whatever to the plasterer contracting to run them at per foot *running* when he knows the pattern of the mould and the enrichments required. The master will always find it to his advantage to do this, as it is very easy in measuring the various members of a cornice to make the tape appear to cover a little more than the correct surface, and half an inch in a long cornice makes a considerable difference.

339. THE JOINER'S WORK is also readily contracted for from the first, or the greater part of it, because it consists in a great measure of separate articles, such as doors and windows, which may be easily priced at so much per window and door of each pattern. Thus, throughout a house there are generally only two patterns or sizes of internal doors, one being those of the doors of the principal rooms, as well as those which open on to the same landings, the other size being a secondary set which are more completely out of the sight of the general visitors, being in fact the doors of second bed-rooms, closets, &c. Each of these will be priced separately, according to size and pattern; but as there are only two variations, the whole will only be multiples of them; and in addition, the outer doors, consisting perhaps of the front and back door. Windows, also, will not vary very much, but will generally comprise at least three patterns. The skirtings will be deeper in the principal rooms, and will be priced at per foot run in each case. In this way, by contracting with the joiner to find labour for each door, window, &c., in making and fixing, the difficulty is overcome in a certain measure. Floor-laying is very simple in its measurement, but still I should recommend the price per room to be fixed beforehand, as in all other cases where practicable. The same may be said of the staircases, back and front, which however are generally nearly the last part of the work done, because if put up earlier they are so much damaged by the feet of the workmen, and by the fall of bricks, poles, &c., in the course of the work. Staircases are rather complicated in their scale of prices as well as their construction, and in this department the master will be liable to some little imposition. A handsome well-staircase, with continuous hand-rail, will however take a considerable time to put up; the hand-rail alone consumes some weeks in its construction and fixing, if one man only is employed. On the average, I believe 5s. or 6s. per tread will be found to be about the lowest price at which a competent staircase-hand will undertake a medium-sized well-staircase, either geometrical or bracketted, with deal treads and risers, mahogany continuous hand-rail, and iron or square deal balusters. The price is often as high as 10s., being made up of charges for each separate item, as seen in the price list at pages 49 and 50.

340. The best way is to contract with a competent man for the whole at a fixed price, the master finding all materials for him. It is very important that the timber should be cut out and well-seasoned, and therefore this contract should be settled as early as possible, unless the plan is fully matured and the master competent to choose the proper materials. In order to enable the joiners' work to be fitted without loss of time, either the dining or drawing-room, or both, should be set apart as a carpenters' workshop, by fixing in the window-spaces old sashes, or oiled canvas. or paper, and thus keeping out the weather, while sufficient light is admitted. These rooms may then be finished last; and, in this way, a great amount of valuable time will be saved which would otherwise be lost whilst the men are going backwards and forwards to the shop. Until the carcass is covered in, of course this is impracticable, and some temporary shop must be provided for the purpose of cutting out and trying up the doors and windows, and for planing and jointing the flooring-boards. In this room they should be stacked so that the air can get at them freely, and so securely that they will not be forced out of their proper plane-surfaces, by which they would acquire an untrue surface, called in joinery "being in winding."

341. THE GLAZING is the next part of the work to provide for, inasmuch as the windows ought to be glazed for ten days at least before they are hung. Plate-glass is now so generally used, that it will in most houses of any pretensions to architectural beauty be inserted in the principal front; and, as I have already remarked, when the panes are large the sashes ought to be of well-seasoned oak. The rebates intended to carry this kind of glass must be deeper than usual, on account of its extra thickness; and in most cases a fillet of oak is introduced, with white-lead instead of putty to keep the glass in its place. If the glazier finds both glass and labour, the matter is easy enough to arrange the price; but if the proprietor finds the glass he will scarcely know what price to put upon the glazing of the plate-glass, which is a very simple and quick operation, in consequence of the plates being perfectly flat. In every case, however, the labour of glazing is very trifling, and the putty, also, is not a very heavy item.

342. THE PLUMBER'S WORK within the house I have dilated upon at great length at page 60, *et seq.* It will, therefore, scarcely be necessary again to allude to it here.

343. STONE SILLS to the windows will generally be required, though in some cases cement is run upon brickwork, when the price is an object. The saving is, on the average, about one-half; but in the long run it is rather a loss than, as it is intended to be, an economical plan. Door-steps, kitchen floors, or hall floors, must also be attended to if they are to be adopted. But whatever internal or external stonework is to be provided, should be found and fixed by the stone-mason at per foot, super., running or cube, according to the nature of the work (see the section on stonework at page 23). There will also be extra brickwork required in setting grates, building cellar-piers, and brick-piers for the short timbers inserted in such lower floors as have no cellarage under. The setting of grates may be paid for at per grate, the price of which will vary greatly from that of a large kitchen-range, which will often take a man and his labourer two days to complete, to the small bed-room grate, which is set in a few hours. All these items, however, should, as far as possible, be settled beforehand to prevent the annoyance of disputed prices.

344. BELL-HANGING, PAINTING, AND PAPER-HANGING have also been described at length in the sections 9, 11, and 12, chap. 3.

345. BY THIS PLAN OF PROCEEDING, the several finishing details of a house may be so proceeded with by contract that, if the proprietor is not satisfied with the progress of the work, or with the nature of it, he may at any time change his men, except in the case of the joiners, who commence their work in the early part, and do not finish off most parts of it until the end. Even with them, however, it is possible to divide the work so that they shall be paid a certain sum for planing and jointing the flooring-boards, and for cutting-out, framing, and trying up the doors; the laying of the floors, and the gluing up and finishing off the doors and windows forming a separate contract, to be paid for as the work is completed. If these plans are carried out, the proprietor will find that he will have much less difficulty with the workmen than would otherwise be the case, and he will save a considerable sum of money into the bargain. But in order to do this, he must exercise great firmness, as the men are well aware of every loop-hole in their favour, and will take advantage of it if possible. When once the proprietor is committed to them by an *over* payment, they often become lazy and careless, well knowing that he has no remedy but to give them their weekly wages afterwards, as they allege that they cannot go on with the work without money. He must, therefore, be on his guard against this; and it will always be sufficient to pay them two-thirds of their supposed earnings for the first month or two, inasmuch as they generally go off *at score*, and seldom work as steadily towards the end of a job as they do at the beginning. I do not mean to say that these remarks apply to *all*, but the average of journeymen, I am afraid, must submit to the accusation.

CHAP. X.

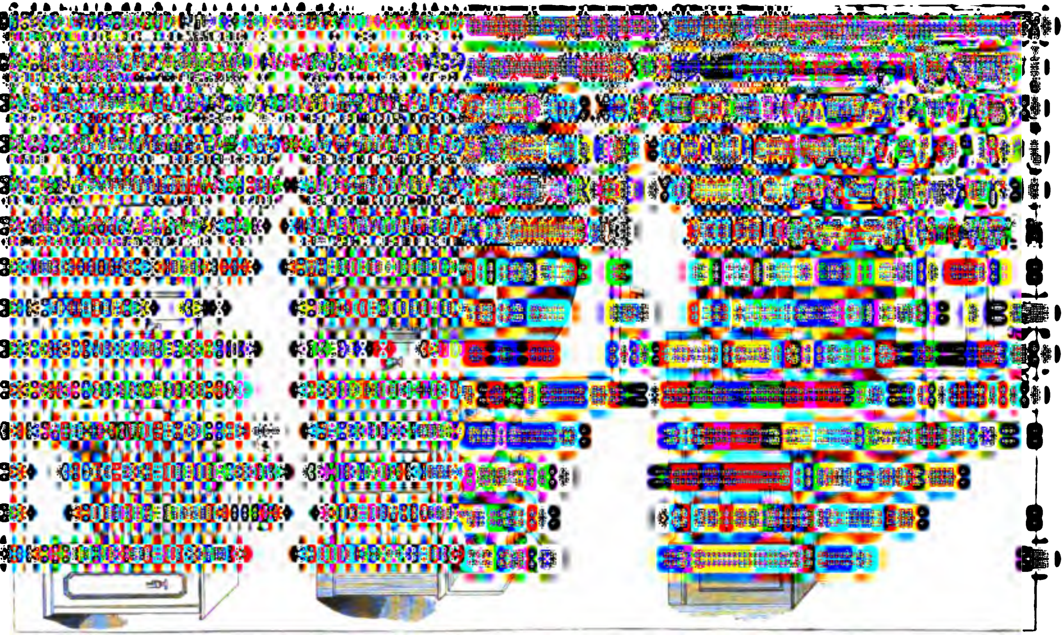
OFFICES, YARDS, AND GARDEN.

Sect. 1.—Ordinary Offices.

346. **The Kitchen** is usually included within the area of the house, though in country houses the contrary is often the case, and with the advantage of avoiding the smell of cooking. But I am not now about to describe the locality of this department, but rather the fittings which are required in order to place the cook in a condition to perform her duties with advantage to herself and her mistress. It is an old adage, that "bad workmen complain of their tools;" and in this case it is applicable, inasmuch as a bad cook is never satisfied with her kitchen arrangements, however good they may be. But, on the other hand, a good cook will scarcely be able to do justice to her powers unless she is allowed to have a proper and sufficient kitchen-range, with the other requisites presently to be detailed. Light in the kitchen, both by day and night, is one very important item that should always be attended to, and also a proper ventilation. If the cook is half suffocated, she cannot possibly do her work properly; and her stomach will be so upset, to say nothing of her temper, that she will be incapable of tasting and seasoning her dishes to suit the palates of her employers. Air, therefore, should be supplied by the kind of valve shown at *fig.* 54 *c*, which admits air without a draught. Arnott's valve may also be introduced with advantage, especially with a close grate, as in this there is little ventilation up the chimney, and the only escape for the foul air is through the fire itself. I have already, at page 108, gone at some length into the question of cooking by gas or coal, and to that part of this book I must, for want of space, refer the reader for the details of the subject. If gas is preferred, it will be necessary to fix the proper apparatus instead of the usual cooking grate. An immense variety of these last is now made by the different ironmongers, without much real or apparent advantage in any one over the rest. The principal points of difference are these, viz.—1st. Open fires, called kitchen ranges, with oven and boiler; for the three sizes of those suited to different families, see *figs.* 67, 69, and 70. 2ndly. Cooking stoves, being closed or nearly closed fire-places (*fig.* 68), with hot plate (A), oven (B), boiler, and hot closet (C); also, steam kettles (F F F) for vegetables, and a large steam closet (G) for airing linen, warming dishes, &c.; E, a slide for regulating the fire. This is a very complete apparatus, and is sold by Burton, of Oxford-street, and by Deane and Dray, as well as other makers, at the prices annexed to this section. For large families this is a very economical stove, and a moderate fire will serve for a very large dinner, but it will not send roast meat to table cooked to suit the palate of a *gourmand*, nor will it compete in economy with a cottage range when wanted for a small family. 3rdly. **Gas Stoves**, which certainly perform their task very well, and from the ventilation they afford they roast to a turn, but, as I have before remarked, scarcely economically in this department, though as a whole they may perhaps compete with coal fires. Their forms, as supplied by Mr. Defries, of Regent-street (who takes the lead in this kind of engineering, for such in fact it may be called), are given in *fig.* 72, in which A represents a complete apparatus, intended to bake and roast at the same time in the interior, and to steam on the top; B is similar in all respects, only that it will not both roast and bake at the same time, having only one oven, but by means of slides arranging the air-draught it will do either as desired; C is a very convenient little grate, which may be used either with coal or gas, the former being more suited to the winter when warmth is wanted for the kitchen, whilst the latter, if used in the summer, keeps the kitchen cool and comfortable.

347. A **Hot Plate** will be wanted for all kitchens where cooking in any degree of refinement is carried on; in close stoves it is generally heated by steam, as shown in *fig.* 68; or by gas, as in *fig.* 72 A. When, however, there is an open kitchen-range, a separate hot plate is heated by a distinct little stove, and is set in any convenient situation (see *fig.* 67).

348. A **Smoke-jack**, as shown in *fig.* 67, is by many considered an indispensable adjunct to the kitchen, while others regard it with abhorrence, on account of the noise which it often makes in its revolutions. It consists of a circular fan fixed in the chimney flue, about four or five feet above the mantel-piece, which is made to revolve by the smoke, or rather by the heated air as it ascends. Its spindle is connected with the horizontal rod shown in the figure, over the shelf, by simple clockwork machinery, and this again works the spit by means of the chain there shown. Altogether it is a very simple and efficient apparatus for turning the spit, and when the flue can be



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constructed of a size 14 inches each way, it is the best which can be selected; but in small houses the flues are often limited to 9 inches in one direction, and from them the smoke-jack must be excluded for that reason, its place being supplied by the bottle-jack.

349. **Dressers and Closets** are required by the cook for her plates and dishes, as well as for her spice-boxes, jars, &c., and should always be provided for her; they are invariably made of wood, either oak or painted deal. Their construction is so simple that they will not require any description here; and the cost only need be given in the annexed table of kitchen fittings, which consists of four separate sets proportioned to the four houses alluded to at page 4.

Price of Kitchen Fittings.
Estimate No. 1.

Full-sized kitchen range, complete, with oven and boiler, sliding cheek, and wrought-iron bars. See *fig.* 67.

ft. in.	£ s.		£ s.
4 0	4 12	to	5 10
4 4	...	...	6 6
4 6	...	...	7 0
5 0	...	...	7 17
Smoke-jack complete, with chain, pullies, spits, &c., wrought-iron main-wheel with door and frame for chimney	...	...	6 10
If outside movement	...	...	13 0
Hot plate, from ...	£2	to	5 0

Or, economic ventilating kitchen range (see *fig.* 68), with hot plate for boiling saucepans, frying, &c.; large oven, for pastry, joints, bread, &c.; hot closet, for keeping dinners warm, plates, dishes, &c.; sliding front to fire, to act as a blower, or for keeping the heat from the cook when stewing or preserving; steam kettles for vegetables, &c.; and a large steam closet, for airing linen, &c.

If with wrought iron boilers, panelled coverings, roller front, and roller slide-oven, but not including steam work,

ft. in.	£ s. d.
4 0	13 10 0
4 3	15 0 0
4 6	16 10 0
4 9	18 0 0
5 0	19 10 0
5 3	21 0 0
5 6	22 10 0
5 9	24 0 0
6 0	25 0 0

Steam closet, with copper bottom: 24 inches wide, £4; 30 inches ditto, £5.

Steam kettles, with pipes, tap, valve, &c.: first kettle, £3; each additional kettle, 30s.

Fixing grates about 6s. per foot in width. The expense of the supply-cistern and pipes depends upon the locality, and is not included in the above estimate.

	£ s.		£ s.
Dresser	5 0	to	20 0
Closets	4 0	to	10 0
Hanging flap and hooks	1 0	to	2 0

Estimate No. 2.

Kitchen range, plan as before, but of reduced size and price, viz.:

ft. in.	£ s.		£ s.
3 4	4 5	to	4 17
3 6	4 7	to	5 0
3 9	4 11	to	5 4
Smoke-jack	5 0	to	6 0
Hot plate	...	...	2 0

Or, economic ventilating kitchen range, made on the same principle as that above described, with copper boilers, but without the hot closet under the oven, or roller oven shelves:

ft. in.		£ s. d.
3 0		7 15 0
3 3		8 6 6
3 6		9 7 6
3 9		9 14 0
Dresser of painted deal	£3 to	5 0 0
Closets	£4 to	6 0 0
Hanging-flap, hooks, &c.	...	1 0 0

Estimate No. 3.

Medium-sized kitchen range (see *fig.* 69), with oven and boiler:

ft. in.	£ s.		£ s.
3 0	4 0	to	4 10
3 6	4 3	to	4 13
Dresser	2 0	to	3 0
Closets, &c.	...	...	3 0

Estimate No. 4.

Cottage range (*fig.* 70), with oven and cast-iron boiler, and without sliding cheek:

ft. in.	£ s. d.
2 6	2 0 0
2 8	2 2 0
2 10	2 5 0
3 0	2 7 6
Dresser	2 0 0
Closets, &c.	2 10 0

For price of **Gas Fittings** for kitchen, according to Mr. Defries' estimate and numbered list, see page 66.

350. **The Back Kitchen or Scullery**, when it is used for brewing or washing, as well as for the ordinary kitchen purposes, should always be external to the house, if possible, in order that the steam may escape through the roof. For the water, a sink is required, which consists of a flat platform of tiles or bricks, about three or four feet wide, by two feet six inches, with a slightly raised and rounded edge of oak-

quartering. This communicates with a drain by means of a bell-trap, over which should be a water-cock, if there is a cistern; and when there is a supply of hot water, that also should be laid on. If the house is self-dependent for its water supply, a pump of each sort is generally fixed in the back kitchen, one of which draws up the spring water from the well, and the other from the soft-water cistern. Besides these pumps, there are usually in well-appointed houses a copper and an open fire-place, to be used as an extra fire when large dinner parties are given, and when, for instance, the close stove is fixed in the kitchen, in which roasting is not capable of being carried on to that degree of perfection which is then desired. Galvanized iron boilers are sometimes set instead of coppers, but they are liable to "iron-mould" linen boiled in them, and they are therefore objected to. In other respects—that is, for brewing or for cooking, this kind of iron is quite equal if not superior to copper, as it is not liable to be dissolved by acids like copper; or if acted on, it is not injurious to the system, but rather advantageous. The list of back kitchen fittings, therefore, will stand as under, with the prices according to the nature of the *ménage*:—

BACK-KITCHEN FITTINGS.

	1st. £ s.	2nd. £ s.	3rd. £ s.	4th. £ s.
Sink with hot and cold water cocks, bell-trap, &c. ...	6 10	4 15	3 10	2 10
Well pump	4 10	3 10	2 10	2 0
Soft water forcing-pump	6 10	4 10	3 10	2 10
Washing copper or iron boiler, with furnace grate, set complete	4 10	2 15	1 10	1 0
Plate rack	2 10	2 0	1 10	1 0

351. THE KNIFE AND SHOE HOUSE is a small back office, in which boots and shoes are cleaned; and where a rotary knife-cleaner is not used, a knife-board is fixed for cleaning knives with brick-dust. In most houses, even where the knife-cleaner is used, such a board is wanted in addition, for the purpose of cleaning common kitchen knifes when they are stained with vinegar, &c., or for taking out accidental deep stains in the best knives. The cost of this board is only a few shillings, say 5s. to 8s.

352. A DUST-HOLE is also required in all houses to receive the dust and ashes from the house; and in those families where economy is studied, provision is made for the proper sifting or "riddling" of these ashes, by which the cinders are reserved for future use. The circular sieve, with a wire bottom, is a very rude instrument for this purpose; and as, in using it, the housemaid must necessarily be covered with dust, the consequence is, that the ashes are very commonly put away without undergoing this necessary operation. Next to this in utility comes the large and simple riddling machine, which is merely a wooden framed covering to the dust-hole, but having a wire bottom and a handle, by which it may be shaken, while the housemaid stands at a distance. Here, again, however, she is somewhat incommoded, but not so much so as with the hand-sifter. Mr. Kent, the inventor of the rotary knife-cleaner, has patented a CINDER SIFTER also on the rotary principle, which does away with all the housemaid's objections; and what is still better, *compels* the adoption of the process, because by no other means can the ashes be placed in the dust-hole. Its operation is thus most certain and effective. The unsifted cinders are thrown into the upper part of the machine; a few turns of the handle separate the ashes from the cinders in the most perfect manner, without the least dust or dirt escaping from the sifter; the refuse falls into a moveable box, and the cinders are actually deposited in the coal-scuttle without the possibility of loss or mixing with the ashes. It is sold at 329, Strand. In houses limited for yard room, this machine is of great service in preventing dust and smell, whilst the whole box can be removed to the dust-cart and emptied there. In country houses the dust-hole is generally of considerable size, and often communicates with an open cesspool, being intended to absorb the contents as they are discharged into it. This is better than the keeping the two apart, and at the same time exposed to the air; but it is by no means a healthy plan, and is not to be recommended. The cesspool is easily covered in, and may be readily emptied when necessary, by removing a stone set in a wooden or iron frame.

PRICES OF DUST-BINS AND SIFTERS.

Dust-bin with common sifter.

Wooden bin	£1 10
Sifter	0 5
	1 15

Dust-bin with sifting cover.

Wooden bin	£1 10
Sifter with handle	1 5
	2 15

Kent's patent cinder sifter and dust-bin.

Complete, 1st size	£3 3
Ditto, 2nd ditto ...	4 4

Coal cellars should be built in the most convenient situation, for access both from without and from within; and they should, if possible, be of such dimensions as to contain from six months' to a year's consumption, because coal is almost always far cheaper in summer than during the winter season, and therefore a stock should be laid in. It is a good plan to divide this space into separate sections, so that each part shall be cleared off, leaving no small coal, before the next is commenced.

353. **The Larder**, which is the place set apart for keeping fresh provisions in, and also, in most cases, for the salting of pork, beef, &c., should be placed where it can have a thorough draught, and where it is sheltered from the sun. A northern aspect is therefore the most suitable, or, next to that, an easterly one. The thorough draught cannot always be procured directly, but if it cannot in that way, a large air-drain may be carried under the floor to the opposite side of the house, where a grating may be fixed, and thus a free draught may be obtained. Underground larders are seldom efficient for the keeping of meat, because this perfect draught is not attainable except in windy weather, when there is little difficulty in effecting its preservation; but in moist and muggy weather the air is quite stagnant in the basement story of a town house; and, consequently, though tolerably cool, the air is not rapidly changed, and putrefaction goes on without let or hindrance. The pantry merely requires a sufficient number of deal shelves, and a door, of which the panels are replaced by plates of perforated zinc, of a pattern sufficiently close to prevent the entrance of flies, and yet large enough to admit the air freely. Where there is also a window, it should in like manner be guarded by similar sheets of zinc.

354. **Other Offices**, such as butler's pantries, housemaid's pantries, &c., are generally included within the house, and merely require shelves and closets to make them all that is desired.

355. **A Back Yard** paved with hard bricks, tiles, pebbles, or stone, is a necessary appendage to every house when it can possibly be obtained. It is chiefly useful in permitting small carpets and mats to be beaten, or any similar daily operation which must otherwise be done in the back kitchen.

Sect. 2.—The Dairy.

356. **The Dairy** in country houses is often an expensive and pet establishment, and the room devoted to its use is then fitted in a very extravagant manner. The chief essentials in this department are—1st, the means of procuring as even a temperature as possible all the year round, and that as near as may be to 50 degrees of Fahrenheit; 2ndly, proximity to the milking place of the cows; and, 3rdly, as the cows should be near the dairy, a cow-house also must be provided for, which may as well be under the same building.

357. **The Dairy-room** should be placed on a dry and somewhat elevated spot, though not so much so as to be exposed to the action of the north and easterly winds. The west or north-west side of a hill is the best situation, and then the dairy may be built facing the hill, with the cow-house on the lower side, protecting it from the sun towards the south. The dairy-room itself should in such a case be partially excavated in the soil, and its walls should be of hollow brick, from 14 to 18 inches thick, the lower courses being laid in cement, and the ceiling being an arch in solid brickwork; and if a small stream of water can be made to run through it at pleasure, so much the more efficient will it be in summer, in point of coolness and cleanliness. The roof should always be of thatch, that being the best non-conductor of heat which we possess in the shape of a roofing material; and it should project considerably at the eaves, with a verandah as well on the sides with windows, to keep the sun off. Over the dairy, in the roof, may be a loft for cheese or fruit, where such a store-chamber is desired. The floor should be of stone, brick, or paving tiles, sloping gently towards a central drain, which should be well-trapped; and, as an additional precaution, this drain should run into a small cemented or lead trough, which should be emptied out each day to prevent fermentation. Windows should be provided on opposite sides, which should be glazed, but capable of being opened to the full in warm weather, at which time shutters of perforated zinc should be substituted for them. Round two or three sides of the room a platform of brick or slate should be raised about 18 inches from the ground. This is generally effected by half-brick piers and arches, or by piers with slate thrown across; and upon this platform the milk-pans are placed.

358. **A Small Wash-house** is required, when the dairy is placed at any distance from the ordinary wash-house. In it there should be a chimney, with a small fire-place, which must be constructed on such a principle as to suit the kind of butter-making preferred. For the Devonshire mode, a small close stove is the best; and, indeed, for all other methods this

answers equally well. From this a flue may be carried round the dairy, with a damper to cut off the heat in warm weather, just as in greenhouse flues; and at pleasure it may be carried into the chimney away from the milk-room. This wash-house should have an outer door to the south, and should not have any internal communication with the milk-room. This room, also, should be paved in a similar way to the milk-room, as it is here that all the utensils should be kept and washed.

359. THE COW-HOUSE for private families is generally limited in its accommodation, being at most intended for only two cows. It merely requires space for the cows to stand, with room to milk them, for which an area 12 feet by 12 feet is quite sufficient, or even less where room is an object. A rack and manger, with a sound brick or stone floor, are all the arrangements proper for the accommodation of these animals.

360. THE COST OF DAIRY BUILDINGS complete, as here described exclusive of utensils, will be about £60, which sum may easily be extended to £100 if greater ornament is desired, or in situations where thatch and building materials are dear. In the above calculation the doors, windows, &c., are all of the roughest description, but well-made, and in accordance with the thatched roof. The pillars also of the verandahs are estimated at the price of rough larch or Scotch fir poles. The dimensions of the milk-room, are 12 feet by 10 feet; wash-house, 12 feet by 8 feet; and cow-house, 12 feet by 12 feet.

SECT. 3.—STABLE AND COACH-HOUSE.

361. THE STABLE suited to an establishment where from £500 to £1000 a-year are spent, should certainly not exceed two stalls and a loose box at the outside; and this, therefore, will comprise the accommodation which I shall here describe. The best arrangement is to build a stable about 21 feet or 22 feet long, 14 feet or 15 feet wide, and 10 feet high, with loft over. This space may then be divided off into two stalls 6 feet 6 inches wide, and a loose box 8 feet wide, allowing 6 inches for each stall-post and partition. A large ventilating shaft should be carried up from the centre of the ceiling, which should be lathed and plastered, through the hay-chamber to the roof, where there should be a valve capable of being opened or shut by a cord. The space thus afforded for three horses may not be considered sufficient by some people, but I am quite satisfied that for hack and harness horses it is quite ample; and when it is considered that very often these stables have only one horse in them, or perhaps two, it will be found that, as an average, it is better than a more roomy series of stalls. A window and a door complete the enclosure, each being capable of being kept half-open to admit air in the summer. The door, if cut in half, will do this with safety. The floor should be paved with stones cut in furrows, to prevent slipping, or with hard brick or pebbles; and it should be well drained and trapped. If there are two traps, one in the middle of the stall and another at the back, it will be so much the sweeter, and a considerable saving in litter will be effected. The partitions are constructed by fixing a strong post, called a stall-post, 8 or 9 feet from the head-wall, and carrying it from the ground where it is dowelled into a stone, to the floor above, to which it is securely morticed. At the wall, also, a smaller post is likewise fixed, and the two are connected by morticing into them three bars—one near the ground, another sloping from the head, where it should be 7 feet from the ground, to the foot of the stall, when it may be about 5 feet high; a third occupying a middle position between the two. On this framework inch boards of elm are securely nailed, either with a mere beaded joint, or ploughed and tongued, or rebated and beaded, the last being the most usual mode. After they are fixed, a pattern strip of the desired sweep is held up and a chalk line drawn upon them at the top, followed by a saw which takes both sides of the boarding off to the line, and the whole is capped by a piece of half-inch elm, which easily takes the form of the sweep and is securely nailed to it. Iron mangers and racks are now generally used with a broad edge, which prevents the horse laying hold of them with his teeth. The rack is better low, and placed between the water and the iron manger, so that the horse does not waste his hay.

362. THE HAY-LOFT should be large enough to hold a load of hay and another of straw, as it is very bad economy to be buying these articles by retail. If the stable is ceiled, and the foul air is carried off by the funnel mentioned above, there can be no objection to the storing of the hay above the stable, and in this situation it helps to keep the horses warm in winter and cool in summer, by the non-conducting property of hay and straw.

363. A COACH-HOUSE AND HARNESS-ROOM should be constructed of such proportions as to hold the carriages, harness, &c., which may be desired; and a small fire-place should heat both, carrying the flue as for a green-house, between the walls of the two.

364. A CORN-CHAMBER is also required for storing the corn, with a strong wooden

floor. When this is built on purpose, and there is room to do so, it is desirable to raise this room upon the iron or stone supports which are employed for keeping mice out of ricks and farmers' granaries. The corn-room should be about 12 feet by 8 feet, or somewhat less will suffice; and adjoining it should be a small room for the chaff machine and oat bruiser, which are indispensable in every well-regulated stable. Of course, it is needless to observe that the corn-chamber should have a lock and key; and it is a good plan to have a machine inside the room which will deliver the corn to the oat-bruiser in a certain number of feeds, which may be easily registered. When there is reason to suspect dishonesty, the corn-bruiser may be so arranged that all the oats used must pass through it, and thus the corn can only be stolen and sold after it is bruised, which is more likely to lead to detection. This is effected by connecting the pipe of the corn-feeder with the top of the oat-bruiser, and keeping this locked, except when required to be cleaned.

365. A STABLE YARD AND MANURE-HOLE must always be provided, which should be well paved and drained, so that the water will run off as fast as it falls, either from rain or carriage washing.

SECT. 4.—ICE-HOUSES.

366. THESE LUXURIES of life, which can scarcely be said to belong to Domestic Economy, are generally built beneath the surface of the earth, though they may also be so arranged as to perform their office above ground. The under-ground ice-house is merely a tank for the ice, circular or square in form, but gradually decreasing in size towards the bottom, so that the ice has a tendency to sink into a solid mass, and does not remain supported by the walls when it has melted below. This should be thoroughly drained at the bottom, *taking care that no warm air is admitted through the drain*, which must be prevented by a good trap at the mouth. The ice should rest on a wooden grating. The tank is better made of hollow bricks, with the walls 18 inches thick, which should be cemented outside, to prevent infiltration of water from the soil. It should be arched over, with a hole for the introduction of the ice, unless it can be easily inserted where it is to be taken out as it is wanted, which should be at the top of one side. The above hole, if made, should be covered with a stone, which should be securely fastened, and again covered with straw, to the depth of some feet, over which should be some rough boards or soil, to keep all quiet in windy weather. At the side a small door is fixed, opening into a passage, which again should be guarded by another door, or even a third, all being air-tight, and thus enclosing one or two volumes of air, which is a very slow conductor of heat. In this way ice may be kept through the summer with great ease; but every time the well is opened some small quantity of warm air is admitted, and the ice is raised in temperature more or less. Where there is a dairy the ice-house should be constructed so that the entrance to it should be through the dairy; and thus, not only is the coolest air admitted to the ice-house, but the ice when first brought out, as well as the cold air with it, helps to cool the dairy at the time when it most requires it. When an ice-house is built above ground, it may be made exactly of the same form, and also of hollow bricks; but over this must be heaped a profusion of straw or leaves, *which must be thatched, and thus kept dry*, or this covering will be utterly useless. Wet straw and other vegetable matter soon heats by fermentation, and thus does harm instead of good.

SECT. 5.—GARDEN GROUND AND HOUSES.

367. In preparing to build, and fixing upon the site of the house, it is of importance that a due regard should be had to the laying out of the garden, and the position of the greenhouse or hothouse, if any. It often happens in country houses, that when the house is built, it is discovered that in some way or other it is not adapted to the situation, and that the approach to it is not so good as it might have been, if the front door had been differently placed. Hence, the first thing to be done is to decide upon the plan of the garden, which is to be carried out after the house is built, as well as those of the hot and greenhouses, if they form a part of the plan. Very often the greenhouse door opens from one of the sitting-rooms; and if so, this must enter into the plan; but at all events, the whole garden should be laid out upon paper before the foundation is begun, and thus the mistake may be avoided to which I have alluded above.

CHAP. XI.

OUTLAY IN HOUSE ACCOMMODATION.

368. Having enlarged upon the differences which are met with in towns and rural districts, with regard to house accommodation, I shall here merely give a table of the rent which is justifiable and suited to each income, as well as the outlay by purchase or building which may safely be indulged in. For the various elements bearing upon these subjects, see Book II., Chap. I., page 5. It is often calculated, that the rent should be fixed at one-eighth of the income, but this is affected so much by several circumstances that it is only an approximation to the proper estimate. In the annexed table these are taken into consideration, and the results are there stated.

	Annual Income, £1000.	Annual Income, £500.	Annual Income, £250.	Annual Income, £100.
	£ £	£ £	£ £	£ £
Town rental, including rates and taxes	80 to 120	50 to 80	30 to 40	12 to 18
Country rental, ditto ditto	60 to 90	35 to 45	20 to 30	10 to 15
Investment in ordinary freehold town house by purchase or building	1200 to 1500	800 to 1000	400 to 500	150 to 200
Ditto in the country, including necessary offices, but not luxuries	1000 to 1200	600 to 800	300 to 400	100 to 150

CHAP. XII.

THE DWELLINGS OF THE POOR.

369. Although this book is not intended immediately for the poor, yet as the rich as well as those of moderate income have a duty to perform towards their more unfortunate brethren, it is desirable to devote some consideration to their welfare, as far as this can be modified by attention to their wants. Many country gentlemen, as well as small traders and farmers, have the means of building tenements for the poor—by which I mean not so much the actual pauper, as the labourer living upon less than £1 a-week altogether, including the earnings of his wife and children. It is evident that in such a case the *minimum* accommodation which will afford a decent habitation is all that can be effected, but at the same time it ought to be of such a nature as to enable him and his family to rise above the level of the brute creation. Where a whole family are lodged in a couple of rooms, as is the usual practice in rural districts, or in a single one, as unfortunately too often happens in towns, it is impossible that any decency can be observed, and it is no wonder that the morality of the inmates should be lowered to zero. Hence, it behoves all who have the power, to exert themselves to provide such cottages or lodging houses as shall enable the father and mother of a family to have a bed-room to themselves, and their children of each sex one also; in all, three separate bed-rooms, however small. This is an absolute requisite, and should invariably be insisted on, for without this separation of the sexes it is notorious that most lamentable results occur. A considerable time must elapse before the labouring classes of this country can be so housed, but that need be no reason why as much as possible should not be done towards the accomplishment of this praiseworthy object, however small may be the progress made by each individual. The pecuniary interests of so many are now engaged in perpetuating the present system, that great efforts must be made before much will be done, as compared with the amount of accommodation wanted; and some hundred millions sterling would be required to give the whole of our labourers with families three bed-rooms per family. Many of the cottages in rural districts are not nearly so well built as the cow-houses or cart-stables on the farms at which they are employed; and the ventilation is so imperfect in the miserably crowded bed-room, that it is no wonder that typhus fever so often attacks them. Yet for these wretched hovels, often without any garden

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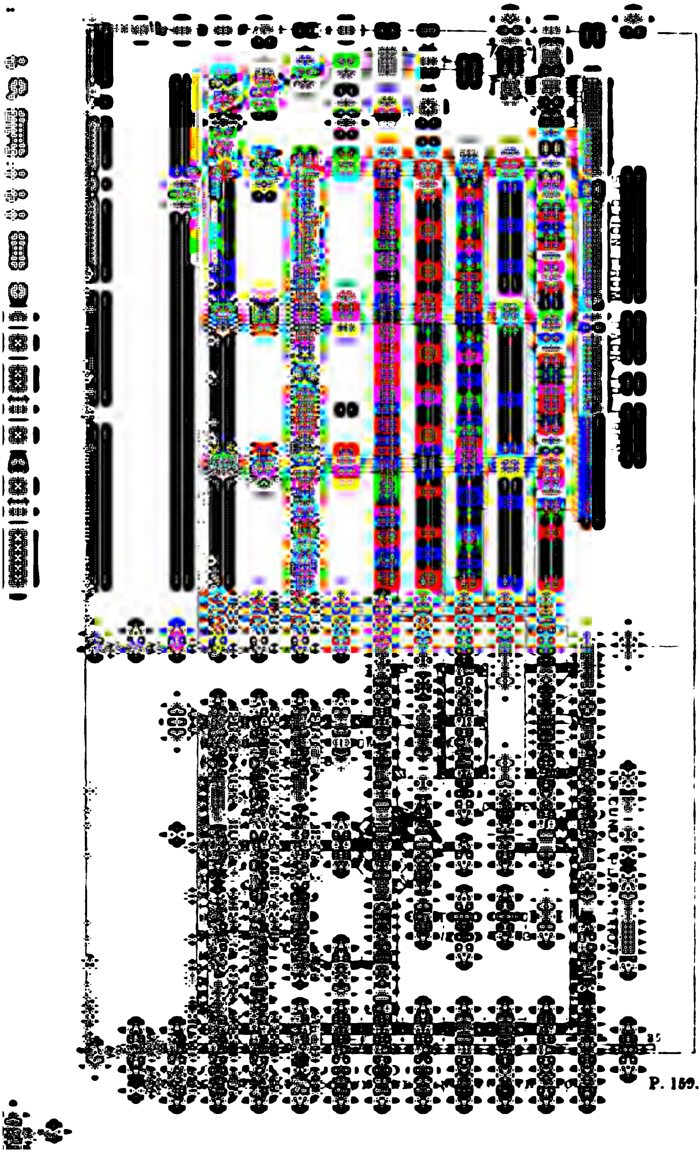

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worth speaking of, from £3 to £6 a-year are paid as rent, and generally deducted from the wages, because they belong to the farmers who employ the tenants. It is a difficult subject to know what is to be done with these old hovels, which now bring in a certain income, and which are worth little or nothing for old materials; but I fancy it would be found advantageous to the proprietor in most cases to lay out such a sum as would suffice to build what is wanted, and which will be found to be not more than £80 on the average of counties.

370. RURAL LABOURERS' COTTAGES are most advantageously and cheaply built in pairs, and the plan annexed will be found to offer every advantage required at the lowest possible cost (see *fig.* 73). By referring to the plan it will be seen that each cottage consists of a sitting-room on the ground floor, 14 feet by 12 feet, with a scullery, 12 feet by 7 feet, and small pantry-closet. In the scullery is an iron furnace and boiler, with sink properly trapped. From the scullery the stairs lead up to a small landing (see chamber plan), upon which the three bed-room doors open. The situation of the beds is there indicated by dotted lines. The fire-places are placed in the internal walls, as should always be the case for the economical management of heat; and if desired, a porch with an outer door may be added. The roof should be covered with tiles; and by means of the dormer windows, a good head-room is obtained at the parts where it is required. The walls are of hollow brick, which should be worked true and pointed inside, so that none of the rooms but the sitting-room need be plastered; and the outside will be much drier with a covering of roughcast, than if the same amount of lime and sand had been bestowed inside. In the garden should be a well between the two cottages, with a party-pump, or if it is too deep for this, with a bucket and windlass. The other usual conveniences for a labourer's cottage may also be added in the garden, including a pigsty. The account will then stand thus, taking the outside price of materials in rural districts:—

COST OF EACH LABOURER'S COTTAGE.

	£	s.
Brick or rubble stone work	£25	0
Wooden chamber floor, three squares	10	10
Stone, tile, or brick lower floor ...	4	0
Four windows, at 30s.	6	0
Five doors, including one outer door	6	0
Stairs	3	0
Roof	10	0
Fittings, furnace, oven, grates, &c....	5	0
Outbuildings	10	0
	£79	10

This is the nett cost, and no allowance is made for profit if the cottages are built by a master-builder, who must have at least 20 per cent. to make it worth the trouble of overlooking, &c. The above estimate, however, is pretty correct; and such cottages, to my knowledge, have been built with some little ornament for £20 less under favourable circumstances. No allowance is made for fencing in the garden, nor for the value of the land, which may be considered, if a quarter of an acre, as worth from £20 to £30 more, bringing the whole outlay up to nearly £100. Such cottages easily let when there is any competition, for £6 or £8 a-piece, which affords a good per centage on the outlay; and, therefore, as a mercantile speculation it will answer, independently of the improvement in the morality and bodily health of the tenants.

371. TOWN DWELLINGS require quite a different arrangement to that detailed above, because land is so valuable that the rooms must be piled one above the other. The usual plan is to let out small houses in single rooms or in pairs of rooms, which are charged from 2s. to 4s. per room per week, according to the density of the population. In the low neighbourhoods of London, a small room about 10 feet by 8 feet, usually lets for 4s. to 5s. per week, and therefore the lower class of mechanics who earn less than 20s. per week cannot possibly afford more than 4s. worth of house accommodation. An attempt has been made to crowd great numbers together in large buildings, so as to economise staircases, which form one great item of expense in these high buildings; but they are not liked, from the want of privacy which they cause. More than six or eight families using the same staircase, are also apt to occasion accidents from the children meeting on them in too great numbers, and slipping down for want of a proper hold. In many of these houses, drying closets are attached to each room, with an air-drain from below; but though this in theory appears likely to act, in practice it is found almost wholly inoperative. In the plan here given (see *fig.* 74), I have introduced a laundry in the roof, which, being made of corrugated iron and glass tiles, is perfectly fire-proof, and is also too hot in the summer and too cold in the winter to be used as a covering for sleeping rooms. This laundry may be allotted to each tenant in turn, giving 1½ day to each, supposing there to be four families in each house, with one laundry at the top of all. By means of dormer windows opposite each other, a thorough draught of air may be obtained; and in default of this, a regular drying closet (see Laundry) may be introduced

if desired. The floors are all fire-proof, the lower ones boarded with inch boards, and that for the laundry covered with cement. They are estimated as for Fox and Barrett's patent, with cast-iron joists, which is the cheapest kind of fire-proof floor with which I am acquainted. The roof is of iron, covered partly with corrugated iron and the remainder with glass pantiles, which will admit the sun. It has no lead of any kind, and the water is carried off by a simple iron gutter and water-pipe. The cost of each set of rooms will, as nearly as can be shown, be as follows:—

COST OF TOWN DWELLINGS, each.

	£	s.
Brickwork	31	10
Floor (average cost), fireproof ...	38	0
Windows and doors	13	0
Stairs (half-flight, iron staircase) ...	7	0
Water-closet, scullery fittings, water-pipes, &c.	5	0
Grates	3	0
Ceiling and walls, plastering	6	0
Painting and papering	10	0
One-fourth of laundry, including glass roof	10	0
	£123	10

This will make the whole building, consisting of eight dwellings, cost somewhat less than £1000, to which must be added the cost of ground, and the rates and taxes paid by the landlord, in all cases, in this description of property. These may be estimated at about £40 per annum; and as each set of rooms may be supposed to average 5s. per week, a balance of £64 will be left as interest for the outlay. Unfortunately, however, this class of tenants pay their rents so badly, that 6¼ per cent. nominally is considered insufficient to produce anything like 5 per cent., after deducting the losses by wilful defaulters and deaths. Thus, as a speculation, it is not a very tempting one; and it is only when undertaken from motives of philanthropy that it is at all likely to be carried through. In most of the houses inhabited by this class of men, the original intention of the builders was to obtain a better sort of tenants; and it is only for want of these that they let them out in divisions, hence, they are let at lower sums than they could now be produced for, if newly-built. But the accommodation for the same money is not much more than half what is offered by the model-dwellings, in point of space or finish of details; nor are the ordinary houses fire-proof, which item alone makes some considerable difference in the outlay.

872. THE SUPPLY OF AIR AND LIGHT, as well as the heating of these dwellings, may be conducted upon the principles described under the various chapters and sections pertaining to them. The labourer requires only fresh air, which is as much the object of the rich man as the poor; and this can always be obtained by him when it is met with in a state of purity around his house. If, on the other hand, his dwelling is fixed on an unhealthy spot, nothing can be done but to make it as far as possible the contrary, by means of drains and attention to cleanliness. Water and gas, in towns and cities, may be placed at his command in such quantities as he can want; both being cheap commodities enough, and therefore within his reach.

873. If, in spite of all the advantages of well-built model-dwellings, they are still refused by those to whom they are offered, their promoters can only wonder at the strange perverseness of the human mind. But as in some instances they are wonderfully successful, and more especially when they are arranged in small groups of six or eight each, hopes may be entertained that they will be as much prized as they deserve, and that they will tend to raise the condition of the labourer, both in the city and in the country, to a *status* far removed from that of the lower animals, which unhappily at present he and his family too much resemble in many particulars.

BOOK III.

FURNITURE AND FURNISHING.

CHAP. I.

RAW MATERIALS, AND THEIR MANUFACTURE.

Sect. 1.—Furniture-woods and Cabinet-makers.

374. The varieties of wood employed in the manufacture of furniture in this country are not very extensive, the chief being mahogany, oak, rosewood, walnut, satinwood, and maple, for the ornamental parts, and oak, cedar, birch, beech, and pine (white and yellow), for the more useful kinds. Besides these may be enumerated, as in occasional use, yew-tree, pear-tree, ebony, and zebra-wood.

375. Mahogany, though coming from several colonies, is either called Honduras or Spanish in the trade. The former has a coarse, loose, and straight grain, without much curl or wave in it. The latter is darker in colour, with more or less curl, by which in great measure its price is regulated, and with a very fine, close texture, which is sometimes almost free from any of those fine indentations which are so common in most of the woods of all countries. In most cases Spanish mahogany is very hard and strong, and will bear great violence before it breaks; it is moreover also free from any tendency to twist or alter its shape, which is a very valuable quality in furniture woods. When, however, mahogany from the Spanish colonies is very much curled, it is not nearly so strong or so free from twist; but this is of little consequence, as its value is so great, as to lead in almost all cases to its being cut into veneers, which are very thin slices of the wood, afterwards glued on to some less valuable kind, as Honduras or cedar. These veneers are cut out with a rapidly-revolving circular saw, and sometimes sixteen or eighteen out of a single inch of the wood. The weight of mahogany is a pretty good test of its value, the heaviest being generally the best.

376. Oak is either British or Foreign, the latter being commonly called wainscot in the London trade. British oak is darker in colour than wainscot, and has often more grain, though sometimes it is almost perfectly free from it, depending in this respect a good deal upon the direction of the saw-cut. It requires at least seven or eight years' seasoning after it is cut into planks before it is fit for use. Wainscot also takes as long in seasoning, and is worse than the common woods if it is used in a green state. Both of these varieties of the oak are very hard to work, and the cabinet-maker injures his tools rapidly in cutting or planing them. The transverse section of the large pollard oaks of this country exhibits a most beautiful curl; but it is generally full of defects, and also, like all transverse sections of wood, very liable to swell and shrink on changes of moisture. Oak is very little heavier or harder than the best Spanish mahogany, but considerably more so than Honduras.

377. Rosewood, until very recently, was more highly valued than any other wood for ornamental furniture; but walnut is now at least equal to it in general estimation. It is a hard dark wood, with some little curl, intermediate in this respect between Spanish and Honduras mahogany, and a very open grain. It, like Spanish mahogany, is chiefly cut into veneers, which are used extensively in table tops; while the solid wood itself is formed into the legs and backs of chairs, and the carved ornaments of cheffoniers, &c. It is sold by weight as imported, and when reduced into planks either by weight or by the inch.

378. Walnut is partly obtained from abroad, and partly from English growth. For many years its use was abandoned in favour of rosewood and mahogany, but it is now employed for drawing-room furniture to a great extent. It somewhat resembles rosewood, but has more brown and less red and purple in its colour. It has also a closer grain, being a very compact, hard wood, and susceptible of a very high polish. When thoroughly seasoned, it is tough and little inclined to warp; and its tenons hold firmly, so that it is well suited for chairs and other similar articles.

379. Satinwood is a foreign wood, now used chiefly for inlaying, and for the veneers of picture frames. At one time, however, it was much in fashion for drawing-room furniture. It is of a full yellowish colour, with a fine grain, little curl, and a silky lustre. It is by its toughness well adapted for furniture making.

380. Maple, also foreign, is of several qualities, the bird's-eye maple being the most highly valued. It somewhat resembles satinwood, but is more buff than yellow in colour, has more curl, and almost all the qualities have more or less of the

knots called bird's-eye. It is little used in furniture, but is employed largely in the frames of engravings.

381. **Cedar** resembles mahogany in colour, but has no curl, and is only valuable for its freedom from all tendency to warp or "cast." The best varieties have a peculiarly pleasant aromatic smell, and for this reason, as well as for its mechanical good properties, it is highly valued for making the drawers for containing clothing, of which the fronts are usually veneered with Spanish mahogany upon cedar.

382. **Birch** is an American production, being imported both from Canada and the States. It is a very close-grained, strong, wood, easily worked into furniture of all kinds; and by staining, capable of being made to resemble Honduras mahogany very closely. When unstained, it is of a pale yellowish brown, in which state, if polished or varnished, it somewhat resembles satinwood in its amount of silky lustre, but is darker and more brown than that wood. It is most extensively used at present in the manufacture of different articles of furniture at an inferior price, suited to the wants of those who cannot afford mahogany or rosewood.

383. **Beech** is a very close and tough wood of British growth, which is admirably calculated for all purposes requiring great strength. It enters into the formation of nearly all our best chairs, of which the concealed framework is made of this wood, in order to stand the shocks to which they are subject. It is also used for the framework of bedsteads and tables. It is nearly of the colour of birch, but rather paler, and it may be known by the presence of those peculiar little specks of darker brown, which are easily seen in the carpenter's plane, that being always made of beech to ensure it from splitting.

384. **White and Yellow Pine**, though soft, are well calculated for all kinds of furniture which require large surfaces to be painted, as for instance, painted wardrobes, chests of drawers, &c. When thoroughly dry, these woods are very free from all tendency to warp or shrink; but as they are often used in a half-seasoned state, they then shrink and crack to such an extent that the articles made of them fall to pieces. They are readily distinguished from one another by the difference of colour, and from deals by the absence of turpentine veins. When stained and varnished, yellow pine looks very well, but as the stain is liable to fade, this good appearance does not last many years.

385. **Price.**—Mahogany, rosewood, walnut, satinwood, maple, and cedar are sold by the foot superficial, calculated at one inch thick, and this measure is adopted even in planks of great thickness, resembling in this respect the mode of measuring and valuing marble. Rosewood, as imported, is sold by weight; oak is sold by the cubic foot, as also are all the inferior woods alluded to above. The following are about the average prices of them in London:—

Price of Furniture-woods Sold by the Foot of Inch Stuff.

	1st Quality.		2nd Quality.		3rd Quality.	
	s.	d.	s.	d.	s.	d.
Mahogany, Spanish	1	6	1	0	0	6
Ditto, Honduras	1	0	0	9	0	5
Cedar	0	8	0	7	0	5
Rosewood ...	2	0	1	9	1	6
Walnut	2	0	1	6	1	9
Satinwood ...	1	6	1	0	0	9
Maple	2	0	1	6	1	0
Lime	0	5	0	4	0	2

Price of Furniture-woods Sold by the Foot Cube.

	1st Quality.		2nd Quality.		3rd Quality.	
	s.	d.	s.	d.	s.	d.
Oak	8	0	6	0	4	0
Birch	3	0	2	9	2	6
Beech	2	6	2	3	—	
Yellow pine ...	2	0	1	10	1	8
White pine ...	8	0	2	0	1	8

386. **Lime** is a white British wood, much prized for carving, being very homogeneous in its structure, and therefore well adapted for that purpose. It is little used for furniture in any other way.

387. **Pear-tree** is also used in the same way, as it closely resembles lime in all respects.

388. **Cane**, imported from India, is used for the cane work sometimes introduced in chairs, &c. It is then split and worked by hand in the established octagonal pattern.

389. **The Workmen employed** in converting these woods into furniture are called cabinet-makers, but for their use machinery is also largely brought into play, in cutting veneers, and in some cases mouldings, mortices, and tenons. Veneers are cut in great quantities by the saw-mills, the saw for the purpose being very fine and true. Almost all kinds of furniture are made by the piece, and little or none of this work is done by the day. In large towns, such as London, Birmingham, and Manchester, the journeymen cabinet-makers devote themselves to some one kind of this work, such as chair-making, bedstead making, table-making, &c.; and in this way they are able to get through a greater quantity in a given time, and also

in a superior manner, than if they were engaged in several varieties of work consecutively. In cabinet-making there is a vast difference in the framing and finish of the articles comprehended under that head, depending upon the skill of the workman, and the time and pains which he bestows upon his work. But far more depends upon the wood, which, if of bad quality and not thoroughly seasoned, may be put together as well as is in the power of man, and yet in three months it will have so shrunk and twisted, that the article is utterly useless. The reason of this use of improperly-seasoned wood is often said to be the want of capital; but this is scarcely the proper one, since it is notorious that some of those manufacturers who use the greenest wood are capable of affording and applying an almost unlimited amount of money. The real reason is they do not like their money to lie idle, which it does, according to their notions, during the time when the timber is seasoning. Mahogany requires at least three or four years after it is cut out, which, at 5 per cent., will add about one-quarter or one-fifth to the price, without at all adding to the appearance of the article itself. Hence, let the capital be what it may, the manufacturer who sells his mahogany goods unseasoned can afford to take one-fifth less for them, as far as the wood is concerned. This, however, only represents a portion of the whole outlay, the remainder being made up by the cost of labour and the share of the expenses of the whole establishment; so that, perhaps, the use of green wood may be reckoned as a present saving of from one-eighth to one-tenth of the nett cost of the article. It is, therefore, no wonder that, when competition is so keen, and when the purchaser is often a chance one, the unseasoned trade should be the most profitable; and the unskilled public are tempted to purchase handsome pieces of furniture at prices which will only suffice, at thoroughly respectable establishments, to procure plain, but well-seasoned, and therefore serviceable articles.

390. THE TOOLS of the cabinet-maker are very similar to those of the joiner, and in principle the two kinds of work approach one another very closely. But as the former artificer requires to make his joints very finely and securely, he uses tools of more delicacy. Glue, screws, &c., are also used in the same way, and indeed the whole business may be described as a finer species of joinery. There are, however, several kinds of work superadded, as the use of veneers, carving, turning, and inlaying, the last including the several sub-divisions called buhl-work and marquetry.

391. VENEERS, as I have already observed, are very thin layers of the more expensive kinds of wood, which are cut out with a fine circular saw, and then glued upon a prepared surface of a less expensive kind; thus if the top of a rosewood table one inch and a quarter thick were made of solid rosewood, it would cost from two shillings to two and ninepence a foot, exclusive of the labour; but by veneering it upon cedar or Honduras mahogany at fivepence a foot, the price of the material altogether is reduced to about ninepence a foot, and the labour is not very much increased. The difference in regard to Spanish mahogany is not quite so great, but as that wood can be cut into thinner veneers than rosewood, the saving is more than would appear at first sight. These veneers are so pliable that surfaces rounded in one direction may be covered with them, and even circular pillars, and the circular fronts of pianos are sometimes made in this way. In uniting two leaves of veneer at their edges, so as to leave a fine and almost invisible joint when polished, the veneers are each, or both together, put into a screw press between two boards, by which they are kept firm and prevented from giving way. These edges are then "shot" with a long plane till they are perfectly true, after which they are applied to the surface of the wood which they are to cover, previously taking care to fill with glue the pores both of the veneer and the cheaper material, so as to exclude air when they are applied together, and their surfaces gently rubbed with one another. After doing this, a heavy weight is put upon the veneer, or else the whole is put in a screw-press until the next day; but at least forty-eight hours should elapse before anything further is done in cleaning off, or shaping the edges of the work. An open Honduras mahogany or cedar is the best kind of wood for veneering upon, because it holds the glue well and is not liable to warp. But if yellow pine is *thoroughly seasoned*, and is framed to prevent it from warping, it is not so much to be despised as a groundwork, though certainly inferior to those above mentioned. An edge of solid wood is often added to veneered tables, giving to the uninitiated the appearance of the whole being composed of the same; but by looking beneath, the real groundwork is readily recognised. Indeed, in many instances a veneered table, if well executed, is superior to a solid one, because the inferior wood is more free from risk of splitting, warping, or shrinking, and is therefore better calculated for real use than would be the more elegant, but less efficient, one of which the veneer is com-

posed. In examining veneered goods, the eye should always catch the light upon them, by which it will readily see if the surface is perfectly plane. When this is the case, there is one smooth and true blaze of light reflected; but if the veneer is not properly applied, or the groundwork is not seasoned, especially if the article has been made some little time, these inequalities are shown by the light rising and falling, and exhibiting lines waving in various directions. A well-made table or wardrobe, or other article having a flat surface will reflect the rays of light, each as straight as mathematical lines, and this is the case whether it is solid or veneered, but the defect is more general in the latter instance.

392. Carving is executed in solid wood, as mahogany, oak, rosewood, or walnut. It is generally a trade of itself very often united with that of turning, the two being necessary for some kinds of work combining them. Carved work requires, chiefly, fine saws for open work, chisels, and gouges, by which the superfluous wood is cut away, leaving behind sufficient to carry out the intention of the designer. Some years ago a patent was taken out for executing bas-reliefs in wood by means of hot iron dies, which were pressed upon the wood for a few seconds, and then withdrawn in order to brush off the charred lines left by the prominent edges of the die, after which it was re-applied again and again until the required depth was produced. The process, however, was not found to answer, and it was therefore abandoned; one cause of its failure being the necessity for keeping exactly to the same pattern, in a great number of instances, before the first cost of the die was paid for; another being that the sharpness of the iron was soon lost by the frequency of its being submitted to a red heat, which soon oxidises that metal and removes a scale.

393. Turning requires a machine called *a lathe*, which consists of two parts, one by which the body to be turned is rotated rapidly on its own axis, the other by which a sharp tool is applied to it, so as to cut away certain portions of its surface as it revolves. In simple turning, a socket for the article to be turned, and called *a chuck*, is rapidly rotated by a wheel and treadle worked by the foot; and then, by means of *a rest*, which is capable of being moved into any situation required, by arranging a slide in *the bed* of the machine, a variety of chisels, gouges, &c., may be held against the wood; and so it may be reduced into the form of a cylinder or cone, having any number of projections or depressions upon its surface. In the more compound forms of turning, however, numerous complicated machines are introduced, by which the relative positions of the chucks and rests are so altered that the result is not a cylinder or cone marked with elevations, but some one of an immense variety of abstruse forms, which may be indefinitely multiplied. These are called eccentrics, and the name is very properly applied; but as this subject is rather interesting to the furniture *maker* than to the *buyer*, it is unnecessary to dilate upon it further.

394. Thus, by means of framing together certain pieces of wood, sometimes in straight lines, and at others curved in segments of circles, or carved in a variety of forms—sometimes solid and at others veneered—those different articles of furniture which are made of wood are produced. These consist of the following well-known articles, some of which are also executed in metal:—Chairs, tables, sofa and couch frames, cheffoniers, sideboards, whatnots, bookcases, drawers, bedsteads, wash-hand-stands, dressing tables, wardrobes, and a long list of smaller articles, as footstools, bedsteps, towel horses, &c., &c. Of these, chairs and bedsteads only are sometimes made of metal, the latter for the sake of cleanliness and freedom from vermin.

395. Besides the above kinds of work, Inlaying is resorted to as a means of increasing the beauty and elegance of furniture, being chiefly used for that of the drawing-room and boudoir; it comprises the two following kinds:—

396. Buhl-work consists of woods inlaid with metal-work, generally brass, lacquered, or gilt. The metal is first cut out by a stamp, which also serves to mark the wood, and then the workman cuts out the latter so as to receive the metal, which is fixed in with a very strong cement.

397. Marquetry may be described as consisting of blocks of wood joined together so as to form a pattern of some kind, resembling mosaic work in its principle, but not so small in its details. In executing this work the pattern is sometimes made out by gluing together pieces the whole thickness of the slab, or else by the use of veneers which are cut out of this slab, and then united at their edges. This is done to save time, and also because it is more easy to join a tolerably thick surface than a thin one like a veneer.

398. The Surface of all plain cabinet work is first brought to as true a level as possible by the plane, then sand-papered down, using the paper on a block of wood, and afterwards still more finely smoothed off by Dutch rushes, which contain a good deal of flinty matter in their composition. After this, it is now almost universally

French-polished, though in former days a less brilliant surface was considered better, in which oil or bees-wax was applied, and a long time suffered to elapse before any thing like a polish was produced.

399. A COLOURED STAIN is very often added to the wood before polishing, by which Honduras mahogany is made to take the colour of Spanish, or birch that of either. Rosewood is also sometimes heightened in colour by washing it with an infusion of Brazil-wood. Alkanet root and boiled linseed oil are the common stains for mahogany or birch, which are to imitate mahogany; they are first applied, and then a mineral acid which takes off the very bright red, and causes the wood to assume a brownish cast. New oak is also made to take the appearance of old by caustic lime. But all these tricks of trade require great practice to execute them to advantage, and a knowledge of them is only necessary to put the unwary purchaser on his guard against buying stained birch for mahogany, or stained Honduras for Spanish.

400. FRENCH POLISH consists of a gum or gums dissolved in a *menstruum* which will evaporate, leaving it as hard as in its original state. Shellac forms the chief ingredient in this polish, and wood-naphtha and spirits of wine the *menstruum* in which it is dissolved. Most French polishers use the two at different periods of their work, beginning with the naphtha, then mixing it with spirits of wine, and finally finishing with this last fluid almost by itself. For this purpose they dissolve half a pound of shellac in as much wood-naphtha as will suffice to take it up and make a creamy fluid, to which is to be added one-quarter of a pint of *spirit* copal varnish. Then pouring a little of this into a cup some more naphtha is added, and it is rapidly applied to the surface of the wood with a bold sweep of a rubber composed of a woollen material, which must be changed as fast as it gets sticky. As soon as the first coat is thoroughly dry, which may be known by its not sticking to the finger, and may be accelerated by a moderately warm room, another coat is added, using still the naphtha; but as soon as the body of polish is getting sufficiently thick, some spirits of wine is mixed with the naphtha, and then the surface is brought to a fine gloss, using fresh rubbers, and finishing off with the polish lowered with spirits alone. Some expert polishers can bring up a good face with the naphtha, unaided by spirits of wine; but it requires considerable tact, and few amateurs could hope to attain the art—which, moreover, is by no means so easy as it looks—even with the aid of the above expensive material.

401. A FURNITURE CREAM, much more easily used by servants, and capable of keeping up or renovating the face of French polish, is made as follows:—

Butter of antimony	½ oz.
Vinegar	1 oz.
Spirits of wine	1 oz.
Linseed oil	¾ to 1 pint.

Mix and shake well together. The oil should be added in quantity sufficient to make the liquid of the consistence of cream. Of this a small quantity should be rubbed on with a flannel and plenty of friction, once or twice a week. It may also be used on the naked wood, without the French polish as a groundwork, and it will then bring up in a few weeks a very fair reflecting surface, but not quite equal to the brilliancy of the French polish.

402. OIL POLISH is recommended by some to be used for the tops of dining-tables, where the hot dishes and plates are apt to mark the French polish without the aid of mats. It can only be used with advantage upon new wood, or old surfaces which have been thoroughly scraped and cleaned from wax or gums of any kind. It is applied either by using plain cold-drawn linseed oil, or this oil coloured with alkanet root, on a piece of woollen cloth, using a very little at a time, and rubbing with long and vigorous strokes for at least an hour every day for three months, at the end of which time—that is, with about seven days' labour—something like a polish may be expected; but even then not nearly so high as that from the French polish or the furniture cream given above.

403. WAX POLISH is not much used at present, being unfit for table-tops, because it shows the marks of heat quite as much as the French polish; and for chairs it is not adapted, inasmuch as the wax rubs off upon the dress of those sitting in them, and increases their polish more than is desirable. It is made by dissolving five parts of bees-wax and one of resin in enough spirits of turpentine to make them sufficiently thin to spread. Then rub this on to the surface with a cloth, and brush it rapidly and with some force with a brush sold for the purpose, after which the surface is finished off with a fine piece of baize, and though it feels somewhat sticky, yet it has a tolerably firm face. For kitchen furniture it is very well adapted, as the effects of watery fluids of any kind are soon obliterated from it by a fresh rubbing.

SECT. 2.—METALS.

404. THE METALS used for furniture are chiefly *iron*, *copper*, *tin*, *zinc*, and *brass*, with the addition of *silver* and sometimes

gold in small quantities, as well as some of the *alloys of copper*, which imitate silver and gold very closely.

405. GOLD is one of those metals which is valuable not only for its rarity, but for its intrinsic useful qualities. Thus, it is of a rich colour, very ductile and tough, yet capable, with slight alloy, of being made hard enough for all useful purposes. It also recommends itself to our notice as being very little liable to destruction by acids or alkalies, and therefore valuable for cooking purposes; but its high price entirely forbids its use in ordinary life, and it is only in the shape of gold-leaf that it is admitted into the category of articles employed in furniture. In this thin layer it presents all the beautiful colour and surface which is so highly prized in the more costly solid metal, and at the same time it resists the action of the acids upon it.

406. GILDING, for the purpose we are now considering, is effected by first laying on a coat of gold-size, and then when nearly dry applying the gold-leaf, which adheres firmly, and allows the superfluous portions to be brushed lightly away. When the size is quite hard, any part, or the whole, of the plane surfaces may be burnished by rubbing them with a smooth tool for the purpose. The gold so treated is called *burnished gold*, and that left in its original state, *dead gold*. Besides this method, gold is also sometimes deposited upon metallic surfaces by the galvanic process, which will be fully described under "Silver" in the next paragraphs.

407. SILVER is not so valuable as gold, because, in the first place, it is found in greater abundance; and, also, because its qualities are not so generally useful. It is readily acted on by most of the acids, and by the oxygen of the air, which soon converts its polish, if unprotected, into a blackened and dead surface, covered with its oxide. Nevertheless, when attention is paid to it, and the oxide is removed, it is a very beautiful metal, and is extensively employed for the manufacture of those articles of the table which are more immediately concerned in holding our liquids, as tea and coffee-pots, spoons, &c. Its price, however, is high enough to prevent its being used as extensively as it otherwise might be; and as there is no other metal but gold whose surface is so pleasing to the eye, and whose salts are so little injurious to health, a compromise is made by covering inferior metals, as copper, or its alloys, with a thin layer of silver called plating. Goods thus covered are called *plated goods*, and every kind of metallic vessel which is ornamental as well as useful, is sometimes made of this material.

408. PLATING was formerly very difficult to manage in such a way as to be durable; and being always on copper, and the layer of silver very thin, the yellow colour of he former metal soon made its appearance through the silver. In the present day, however, by availing ourselves of the aid of galvanism, by the method patented by Messrs. Elkington, of Birmingham, any metal is readily coated with pure silver to any thickness which may be desired, from a mere wash to that of a penny-piece—or even more, though these stout layers are never adopted in actual practice. By employing a white alloy of copper (commonly called nickel silver, or albata, or any other name which the manufacturer may choose to give it), and depositing the silver upon it, the surface of the baser metal when exposed to wear is not so manifest by contrast as that of copper would be; and hence the article is not wholly to be rejected as soon as some small parts of the silver are worn away; and in this respect a great advance has been made in point of utility. But from the necessary purity of the silver employed it is much softer than the alloy formerly used, and consequently it wears away much more rapidly in cleaning, which is a fact that ought to be known and guarded against. The silver in the electro-plating process is dissolved in acid, and it is deposited upon the baser metal by the action of the galvanic battery; but even if dissolved in the state of an alloy it is not so deposited, on the contrary, the pure silver only adheres to the surface. For this reason, spoons, &c., plated by this process always exhibit, when new, a most beautiful colour, inasmuch as the surface is of the pure metal, and as long as that is entire this delicate appearance lasts. But though we are thus assured of the purity of the metal, we may readily be deceived as to its thickness, and consequently it is only by relying on the respectability of the maker that we have any guarantee in this respect. There is, in general, a considerable difference in price between plated goods sold by the various makers, and perhaps not always in proportion to their intrinsic value; but of this there can be no doubt that some manufacturers of them sell articles which will last twice or thrice as long as those sold by inferior houses in the trade.

409. SILVER, whether solid or plated, is, as far as concerns its surface, either *burnished* or *dead*—terms applied to it in the same way as to gold—or sometimes it is *frosted*, which is a still whiter and more dead kind of face than that called *dead*.

410. THE SUBSTITUTES FOR SILVER (called nickel silver, albata, Britannia metal, Bastin

or German silver, &c.), are all alloys of copper with other metals, as antimony, tin, nickel, zinc, &c. None of them contain any silver whatever, and all are readily acted on by the mineral and many of the vegetable acids.

411. IRON, as a material used largely in building, has already been slightly alluded to, but for the purpose of employing it in household furniture it requires considerable modification, being in most cases used in a different condition, as *steel*. Cast and wrought iron, it is true, enter largely into the construction of fenders and the commoner sorts of fire-irons, as well as the common iron utensils used in the kitchen, as sauce-pans, boilers, frying-pans, &c., but for cutlery steel is necessary, in order to afford that hardness and stiffness which is required to give a cutting edge. It is unnecessary here to go into the manufacture of steel, but it may be described in few words as a compound of iron with a small quantity of carbon, by which its qualities are very much modified; and while it loses its power of being welded or permanently bent into form, it gains in elasticity, in hardness, and in closeness of grain, so that it is capable of a much higher polish than before; and being harder, it retains it much longer. The salts formed by the union of iron and the acids are all harmless to the human constitution in ordinary quantities, and probably they are not only so, but they are really required for the well-being of the animal body. Hence, there is no reason why iron should not be used in its native state, except that from its rapid tendency to unite with oxygen, it stains by its oxide almost any liquid submitted to its action, and also imparts a disagreeable taste. For this reason iron sauce-pans used formerly to be coated with tin internally, and in the present day they are lined with enamel, which is a much cleaner and better substitute. Many people who have a limited number of sauce-pans, go on for years with them untinned or without enamel, because by keeping them clean and *slightly greased* they prevent all formation of oxide, and the interior therefore requires no protection; but for families where there is a sauce-pan for each kind of cookery, and in which it often happens that some are only occasionally wanted, it will not do to rely upon this, and consequently the tinned or enamelled lining is in great request. One modification of iron or steel, known as TABLE CUTLERY, may be described as consisting of knives for domestic use, being composed of steel blades, of three sizes, set in handles of silver, or plated copper, or bone, ivory, or buckhorn. These knives are called carving-knives, when they are of the largest size; and the lesser ones are termed first and second-size table knives, which are too well known to need description. They are manufactured in great varieties, and of qualities and prices suited to all classes.

412. COPPER—so well known to all of us as the metal of which our tea-kettles are made—is a very useful article for many purposes, though from the deleteriousness of its salts it is not to be employed without proper precautions. It is readily moulded by the hammer into any shape, and may also be soldered with hard or soft solder at any joints where the hammer will not serve the purpose. But it should invariably be lined with tin, which is readily applied in a hot state, the copper being first made quite bright by scouring it, and then the tin rubbed in with a piece of tow, aided by powdered resin, which acts in the same way as in soldering, by preventing the action of the oxygen upon the two surfaces while being heated. Copper vessels in which acids are boiled, as preserving pans, &c., require to be constantly inspected, to see that the tin is still entire; and if defective they should be re-tinned; though it is supposed that so long as any tin remains it will protect the copper from the action of the acid, in the same way as the zinc protects the copper sheathing of a vessel at sea. Many cooks use these vessels untinned, believing that as long as the contents are kept boiling they will not act on the copper; but this is a fallacy, and though the action is not great, it still goes on to a certain extent.

413. LEAD is not a proper metal to be used in any vessel for containing food in a liquid or moist state; and it is only as a lining for tea-caddies, or for wine-coolers, that it ought to be employed in any article for domestic use. The reason for this is, that it is so readily acted on by the vegetable and mineral acids, and that its salts are so highly prejudicial to health, and even fatal to life itself.

414. TIN AND ZINC are used largely for the purpose of coating iron, to protect it from the action of the oxygen contained in water and air. In this state the former is called *tin*, and the latter *galvanized iron*, the name being given to it because the zinc is deposited from its solution by means of the galvanic battery, on the same principle as the electro-plating process described at par. 408. Tin, therefore, whether known as "common tin," or as "block tin," consists of iron plates coated with tin by submitting them, while quite bright and protected from oxidation by a coat of tallow, to melted tin, which readily

adheres to the polished surface of the iron. Galvanized iron, on the contrary, although analagous to this in being composed of iron plates, is different in being coated with zinc, which is deposited upon the plates of iron, from a solution of zinc in mineral acid, and consequently they need not be polished.

415. THE ALLOYS used in furniture consist of *bronze* and *bell-metal*, composed of tin and copper; *or-molu*, of zinc and copper, nearly in equal proportions; *brass*, also of zinc and copper, but with the copper in a larger proportion, being about three to one of zinc. The various imitations of silver have been already alluded to.

SECT. 3.—ANIMAL PRODUCTS: IVORY, BONE, LEATHER, HORN, &C.

416. IVORY is obtained from the tusk of the elephant and from the teeth of the hippopotamus and walrus. It is largely used for the handles of knives, and for other purposes requiring a smooth and clean white surface; and, hitherto, no artificial substitute has been discovered which unites the same smooth and beautiful appearance with its tough and durable qualities.

417. BONE resembles ivory in its chemical composition, but is not nearly so fine in colour or grain, and soon imbibes small streaks of the dirt to which it is submitted, by which it is made unfit for domestic purposes. It is, therefore, only from its relative cheapness that it is ever employed as a substitute for ivory.

418. HORN also somewhat resembles bone, more especially in the kind known as *buck-horn*, which, though forming the horn of the stag, is closely allied to bone in its composition, and in all but its outer surface, which is rough and covered with a thin varnish of colouring matter. This substance is only used for the handles of carving, or pocket, or pruning-knives; and the horn which is most commonly employed is that from the bullock. It is a hollow semi-transparent and somewhat bent cone, which differs considerably in composition from buck-horn or bone—containing much less lime, little or no gelatine, but a large quantity of albumen in a highly condensed condition. Horn is not soluble in water or by heat, but it may be readily rendered soft and pliable by the latter agent, and it is thus easily moulded into any shape, or stamped with figures or letters. TORTOISE-SHELL is analogous to horn in composition, though forming another species of defensive armour. WHALEBONE, again, is another similar substance found in the mouth of the whale, where it forms a kind of strainer intended to catch the mollusks upon which this animal feeds.

419. LEATHER enters largely into the composition of some of our best articles of furniture, being employed for covering library tables, and also easy and ordinary chairs, &c. It is neither more nor less than the skins of animals, especially the horse, cow, sheep, and goat, tanned by the action of oak-bark or other substances containing *tannin*. In this process, the skin is first cleansed from the hair and flesh by means of lime and water, and then submitted to the action of an infusion of the bark of the oak, or other tree containing the principle above alluded to. In theory this is simple enough, but in practice great experience is required to make the most of a given quantity of hide, and at the same time to convert it into leather of the best quality. By various improvements, the time and labour required have been reduced, but it is believed not without injury to the quality of the leather. Water and steam power may, perhaps, be advantageously introduced in the mechanical parts of the process, as to grind the bark, or to move the fluid from vat to vat; but the plan which was so much vaunted some years ago by which the bark was introduced within the skin previously submitted to exhaustion of its air by a pump, does not seem to answer the sanguine expectations of those who propounded it.

420. THE PROPORTION OF TANNIN contained in the various vegetable substances is as follows, by which their relative value for tanning may be estimated:—

	In 480 parts.
White inner bark of old oak ...	72
Ditto, ditto, young oak	77
Ditto, ditto, Spanish chestnut ...	63
Ditto, ditto, Leicester willow ...	79
Middle bark of oak	29
Ditto, Spanish chestnut	21
Ditto, Leicester willow	33
Ditto, elm	13
Ditto, common willow	11
Sicilian sumach	78
Malaga sumach	79
Souchong tea	48
Green tea	41
Bombay catechu	261
Bengal ditto	231
Nutgalls	127
Bark of alder	168
Ditto, weeping willow	76

All these substances contain tannin and gallic acid, which seem by the powers of vegetable life mutually convertible. They are characterised by forming with gelatine a flexible substance, very tough and insoluble in water, and not easily liable to ordinary decomposition by putrefaction. They also form with oxide of iron a black combination, which, having a strong affinity for cotton, linen, silk, and wool, is much used by the dyer.

421. The most important property of tannin is that relating to its union with gelatine, by which it forms, from a state of solution, a soft flocculent precipitate, which in drying becomes hard and brittle. This combination is not always exactly in the same proportions, but varies according to the concentration of the solutions, and the relative quantities of the substances; nor is the compound in all cases insoluble in water. When the gelatine is only slightly in excess, it consists of 54 gelatine, and 46 tannin: when there is a large excess of gelatine the compound is re-dissolved. On the formation of this combination the art of tanning depends. The skin of an animal, when freed of its hair, epidermis, and cellular tissue, by means of lime, consists chiefly of gelatine in an indurated state. By immersing this in the tan-liquor, which is an infusion of oak-bark, the combination of tannin with the organized gelatine, is slowly established, and this compound not being soluble in water, nor liable to putrefaction, the skin is rendered dense and impermeable, and not subject to those changes which it would otherwise undergo when submitted to the action of water. But to imbue the skin thoroughly with the tannin, the introduction of the liquor must be gradual, and hence the tanning is performed by successive immersions of the skin in liquor of different strengths. It was observed by Sir H. Davy, that leather slowly tanned in weak infusions of bark, is better in quality, being both softer and stronger, than when tanned by dense infusions. He ascribes this effect to the extractive matter which the skin imbibes, and his observations have since been generally confirmed. In practice, therefore, the result is materially affected by the quality of the material employed in tanning; and hence galls, which contain an enormous proportion of tannin, make a hard leather liable to crack from their deficiency of extractive matter. Hides increase in weight by tanning about one-fifth, or from that to a third.

422. CURRYING LEATHER is the process by which it is rendered supple enough for the purposes to which it is generally applied; it is effected by covering one side of the leather with soft tallow, or tallow and neat's-foot oil, and then stoving it, by which the oily matter is absorbed from the one side as fast as the water is drawn off from the other, by evaporation.

423. TAWING is a modification of the above process, by which alum is made to do the work of part of the bark, or sometimes is used by itself. The skin must be at once submitted to the action of the alum before putrefaction has commenced, or it will fail to effect the change required. As soon therefore as the hair can be removed by the lime-process, the skins are washed and cleansed of all superfluous parts, and are then placed in bran and water after which they are ready for the alum. A bath of alum and salt is now prepared at a temperature of about 190 degrees Fahrenheit, in which the skins are placed for about nine or ten minutes. They are next taken out and the water is thickened with the yolk of eggs and wheat flour, forming a kind of paste, with which the skins are coated and then dried. The subsequent processes vary greatly according as the leather is required for gloves or for other purposes.

424. CHAMOIS AND BUFF LEATHER are dressed in a different way still; both are prepared in this country, and are no longer made of the skins of the animals from which they have derived their names, but from the sheep and ox. These leathers are very slightly tanned indeed, and are then dressed with oil, which is afterwards fulled and scoured out so as to remove any sensation of grease which they might otherwise communicate to the hand. After this they are stoved and are fit for use.

425. TRUE MOROCCO LEATHER is the skin of the goat tawed and dried. It may be known from its imitations by the veins on the inside, which are very well marked in the real skin and deficient in that of the sheep. The dye always shows these veins in a darker shade, and makes them in this way very manifest. In this country a vast proportion of the skins sold as Morocco leather are those of the sheep. A still worse imitation of Morocco is now sold, which has no leather whatever in its composition, but is a varnish spread on a stout linen or cotton cloth and then stamped in the same way as the imitation sheep skin. It is largely used for covering cheap easy chairs, and to an ordinary observer will readily pass for that which it is intended to imitate.

426. RUSSIAN LEATHER is the skin of the horse or calf tanned with the bark of the birch, which gives it that peculiar smell that is so grateful to the senses, and seems to preserve it from the attacks of insects.

427. THE perfection to which machinery has been brought has enabled the dresser to split leather which is thick enough into two or even three layers, which are each separately varnished, and made into enamelled or imitation Morocco leather.

By these means its price has been materially reduced; and for covering tables, or other similar purposes, it answers every object, but not of course coming up to the real Morocco.

428. Hair is used largely in making up furniture, in which it forms the best material for stuffing and padding the sides and bottoms of chairs, sofas, &c., and also for the mattresses of beds. It likewise is used as a woven fabric for covering sofas, chairs, &c., and for straining liquids, as in the bottom of sieves. Horse hair from the mane and tail is that chiefly used, the longest of which is kept for the textile fabrics, whilst the shortest hair is reserved for stuffing. For this purpose it is wound in a peculiar manner so as to curl it, and it is then baked, after which it is unwound and pulled out, in which state it is very elastic and soft, and delightfully easy to sit upon.

429. Wool from the sheep is used also for two purposes; one of which consists of the padding for mattresses, chairs, and sofas; and the other for those numerous textile fabrics which line our rooms in the shape of carpets and curtains. The value of the wool for mattresses mainly depends upon the length of the staple and its colour. A great part is very short, and is merely the clippings from woollen cloth called *flock*, which is made into beds and mattresses of a very inferior class. The composition of wool is nearly the same as hair and horn.

430. Silk is the produce of the silkworm, and is only employed in textile fabrics.

431. Feathers compose the outer covering of birds, the inner coat being *down*, with an admixture of hair in some cases. Both the feathers and the down consist of two portions, *the quill*, which is a tube of horny matter attached to the skin; and *the barb* or feathery portion, which varies greatly in the number, arrangement, and softness of its fibres, some being nearly grouped in a bundle, as the down, and others lying side by side in regular order, like the pen-feathers from the wing. In all but the down there is a continuation of the quill in a solid form, which supports the feather, and from which proceed at various angles the *barbs*, to form the smooth and plane surface. A number of these, lying in regular succession like tiles, one over the other, are sufficient to protect the bird from cold and wet. Feathers are chemically composed of nearly the same substances as hair, namely, albumen in a condensed condition, with a very small proportion of gelatine. In water-birds, as the goose and the duck, they are kept oiled by the bird from glands for that purpose, and hence these feathers require careful cleansing before they are fit for use.

432. Feathers, for the purpose which we are now considering, are obtained—1st, from the common poultry and game which come to table, and which are sold by the cook, and called *poultry feathers*. These are bad in quality, being mixed with ducks' feathers, which are hard and generally full of vermin, and command the lowest price of all, being only used for inferior beds. 2ndly, from the *gray goose* of this country, and called by that name. 3rdly, from the *foreign gray goose*, and known as such. 4thly, from the *foreign grey goose* also, but carefully picked, with the larger and coarser feathers separated; these are called *best foreign gray goose*. 5thly, from the *white goose* of Great Britain. 6thly, from the *foreign white goose*, called *Dantsic*. The price varies from 11d. to 3s. per lb., when dressed and weighed in the ticking cases.

433. Down, likewise, is known as *grey down* and *white down* from the common goose, and *eider down* from the eider duck; which last is obtained partly from the bird itself, and partly from the nest where it is found, being plucked by the parent bird from its breast to form a lining and protection for the eggs and young.

434. The Preparation of Feathers consists first of all in collecting them as soon as possible after the death of the bird, or often in plucking them while alive, as in the instance of geese, which are most cruelly robbed in this way four or five times a year. It is said that feathers are more elastic when thus obtained than when drawn from a bird some time dead, but I much doubt the truth of the assertion. The tail and wing feathers are then removed, and afterwards the remaining mass is placed in a large stove made for the purpose, and submitted to its heat for some hours, during which time they are kept constantly turned and beaten, by which all the adhering dirt, &c., are removed. This effectually destroys all the eggs of insects, and drives off by evaporation the oily matter with which they are imbued; it also hardens and stiffens the fibres, so as to make them much more elastic. Down is treated in the same way, being also washed in clear warm lime water, when necessary, but taking care that none of the powder of lime should remain floating in the water.

435. Feathers are employed in beds, bolsters, and pillows, which are more fully described in another section of this chapter.

SECT. 4.—VEGETABLE PRODUCTIONS.

436. Paper, Linen, and Cotton, are so intimately connected together as materials

used in furniture-making, that they are better described under one head. The first named is composed of rags, which are derived from cotton and linen, as well as recently from straw, wood, &c. Cotton is a vegetable down contained in the seed of the cotton-plant (*gossypium herbaceum*), which is cultivated in America, the East and West Indies, and Egypt. After going through various cleansing processes, this is woven into fabrics used in furniture, called calico, muslin, chintz, dimity, &c. Linen Fabrics, such as table-cloths, sheetings, napkins, and the like, are made from *flax*, which is the straw of a European plant (*Linum usitatissimum*), deprived of its mucilaginous and other similar juices by maceration and washing. It is afterwards bleached, and converted by weaving into lawn, plain linen, damask, holland, &c. Paper is made from linen and cotton rags, also from hemp and straw, which are employed in the manufacture of the coarsest kinds only, known as brown paper. The combination of flexible fibres of which paper is made, depends on the minute sub-division of the fibres and their subsequent cohesion. The materials after being washed, are subjected to the action of a revolving cylinder, the surface of which is furnished with a number of sharp teeth or cutters, all so placed as to act against other cutters fixed underneath the cylinder. The rags are kept immersed in water and continually exposed to the action of the cutters for a number of hours, till they are minutely divided and reduced to a thin pulp. During this process a quantity of chloride of lime is mixed with the rags, the effect of which is to bleach them by discharging the colouring matter with which any part of them may be dyed or otherwise impregnated. Before the discovery of this mode of bleaching, it was necessary to sort the rags and select only those which were white to constitute white paper. If, however, the bleaching process be carried too far, it injures the texture of the paper by corroding and weakening the fibres. The pulp, composed of the fibrous particles mixed with water, is transferred to a large vat, when it is ready to be made into paper. The manufacture of paper is now carried on almost entirely by machinery, as follows:—The vat containing the pulp, as above described, is placed at one extremity of a long wooden frame, which has a revolving cylinder at each end. Over these, which both revolve in the same plane, there is stretched an endless web of brass wire cloth. From the vat the pulp flows down upon the web through a slit in its side, whose width is regulated by a screw, and as the web travels slowly forward by the revolution of the cylinders, the pulp is evenly diffused over its surface by means of a tremulous motion communicated by eccentric action. As soon as the web, covered with its layer of pulp, arrives at the opposite cylinder, and at the point where it begins to descend beneath it, the pulp is wiped off by another large revolver, covered with felt or flannel, and is thence carried on through or between a series of rollers, and lastly over three polished cylinders heated by steam, each at a higher temperature than the one before it. In this way the pulp is rapidly converted into paper, the process being that invented by *Fourdrinier*. Other methods on somewhat similar principles are also adopted; but the endless wire-web, receiving and straining the pulp, is at the bottom of all, the detail only being varied. Paper thus made requires *sizing* if to be used for writing; but for the purposes of furniture-making it is used in its raw state.

487. Papier Maché, as its name implies, consists in brown paper softened and mixed up with gum, then pressed into certain forms and covered with an ornamental surface. But in most of the articles of furniture which are sold under this name, the foundation, instead of being of *papier maché*, is of wood, as for instance, in chairs, tables, &c. Paper would not be capable of affording sufficient resistance for such articles, and hence it is not available; but why varnished wood should be so called, I am at a loss to know. The surface of the *papier maché* is generally covered with a black varnish, in which are imbedded pieces of mother-of-pearl, and when the whole is thoroughly hard and dry, it is rubbed down until the pearly surface appears, after which either a regular painting is effected on it, or else it is only shaded and tinted in a fanciful manner. Chairs made of wood and ornamented in this way make a pretty variety in the drawing-room or boudoir; and many ornamental articles for the table, as inkstands, blotting-cases, &c., are much used.

488. Caoutchouc, or India-rubber, is not much used in furniture in its pure state, but it enters into the composition of the varnish with which the imitation leathers are coated. In substance it is used to form the tubes with which table lamps are sometimes supplied with gas; but for this purpose it must be *vulcanised*, or prepared with sulphur, by the agency of which it is rendered much more elastic and strong, and more capable of resisting pressure or injury of any kind. It is the inspissated juice of several American and Asiatic trees, which is now imported in large quantities in a crude state, and is then purified and

submitted to a variety of processes, which alter its qualities very considerably. It is soluble in some of the oils, which, however, do not entirely evaporate from it; but in coal-naphtha it is still more readily dissolved, and this leaves it perfectly unaltered on evaporation, though with a disagreeable smell, which is got rid of with great difficulty. Boiling water softens it, but does not dissolve it; and it is also insoluble in alcohol; at a temperature a little above boiling water it melts, but on cooling does not recover its elasticity. Chemical agents have little or no effect upon it; it consists of carbon and hydrogen alone.

439. **Gutta Percha** resembles India-rubber in composition and in resistance to the action of chemical agents, but it has not the same elasticity, and it is much harder at the ordinary temperature. It is dissolved in naphtha, and melted by heat, and capable of being moulded, when warm, into any shape; in this way it is made to take the variety of forms now so common, as picture-frames, ink-stands, &c., presenting a variegated brown surface of a smooth and somewhat polished aspect. This useful substance is daily extending its domain in the field of our domestic embellishments.

440. **Alva Marina**, or prepared sea-weed, is employed in the stuffing of mattresses, and forms a very soft, elastic, and cool medium for the purpose. It is usually washed from its salt and carefully dried, with the addition, in some cases, of a very weak solution of corrosive sublimate, to prevent the attacks of insects.

441. **The Fibre of the Cocoa-nut** is now used to an enormous extent in the manufacture of mattresses, for which it seems well adapted; and also in making matting for kitchens, lobbies, &c., for which also it is still better calculated. It is the outer covering of the cocoa-nut, torn into shreds and combed so as to form a staple resembling, in all but colour, coarse hemp or flax, but harder and more fitted for the rough wear which it has to endure as a covering for floors where there is great traffic. Cocoa-nut matting is now sold at about 3s. per square yard, when of the best and stoutest make; and at lower prices in proportion to its make and to the width, so that for narrow passages it may be laid down at 1s. 3d. per yard running.

442. **Vegetable Ivory** is the nutritive matter contained in a South American nut, and somewhat resembles the animal ivory in texture, so that it is capable of being used as a substitute for it; but it has neither the strength nor the hardness of that material, and its liability to absorb water renders it unfit for any purpose where it is exposed to that medium.

Sect. 5.—Marble and Stone.

443. **Marble and Stone** of various kinds are both sometimes used in our furniture for table tops; but nothing more need be here said than has been already alluded to at page 10.

Sect. 6.—Articles of Glass.

444. **Glass** is now extensively used in the manufacture of our domestic utensils and ornaments; but it is of comparatively recent manufacture, having only been used in England to any great extent for the last two centuries. Plate-glass has only been made in England about eighty years, the British Plate-glass Company in Lancashire having been established in 1783. Since the abolition of the duty on glass it has enormously extended its field of operations, and it is now used for various articles in which its high price formerly interdicted its employment.

445. **Glass** is formed by the fusion, at a high temperature, of flinty matters by means of an alkali or metallic oxide; and its nature depends upon the quality and proportions of the materials of which it is composed. Thus, there are four distinct varieties, namely—1st, *bottle-glass*, more or less green; 2nd, *crown-glass*, used for windows chiefly; 3rd, *flint-glass*; and, 4th, *plate-glass*. Its transparency and cleanliness are the chief recommendations to the housekeeper, rendering it fit not only for ornamental but for useful purposes. It is also readily cast in moulds, so as to assume any form required; and after this it may be ground and polished to a brilliant surface. Besides these advantages, it readily assumes any colour which may be desired, by mixing certain matters with it while in a melted condition. In this state its transparency may be retained, or it may be rendered opaque, or semi-transparent, at pleasure, so that as far as the eye is concerned it is one of the most manageable substances in art. When heated it is excessively ductile, so as to be capable of being drawn into the finest threads. In its ordinary state when cold it is exceedingly brittle, and this is increased by rapid cooling; or, on the other hand, much diminished by careful and slow cooling, called *annealing*. The harder varieties of glass require the diamond to cut them, but the softer sorts are readily divided with the file when applied to an angular or projecting surface.

446. **Glass** is always fashioned into form while in a melted state, but there are two different methods adopted—one by which it is *blown*, and the other by which it is *cast* into shape. In the former method an

iron tube about five feet long is used, which is dipped into the pot of melted glass, after being first heated, and then by turning it round on its axis a lump of glass adheres to its extremity, small or large, according to the wish of the workman, and his subsequent operations in turning it, &c. If he requires a very large lump he withdraws the rod and allows the mass adhering to it to cool slightly, and harden to a certain extent, upon which he re-introduces it, and then easily obtains an accession of "metal," as it is called. As soon as he is satisfied with the quantity which he has collected, he lifts up the rod to a horizontal position level with his mouth, and blows into it, by which a hollow globe of glass is obtained; and this is variously handled and modified according to the precise nature of the article desired (see following paragraphs). Cast glass is either the "metal" poured into moulds, on the same principle as other castings, from which it comes out with a surface more or less rough, and only fit for the commoner articles, until it is ground or polished, or else it is cast into a large plate, of uniform thickness, by spreading, as it were, the melted glass upon a table by means of a roller passing over it. This method is adopted in making *plate-glass*, which is now manufactured in such enormous quantities, and of dimensions which would have puzzled our ancestors to approach in size.

447. BOTTLE-GLASS is used in the manufacture of all our ordinary wine-bottles, and for milk-pans and similar articles. It is formed of coarse river or sea-sand, lime, and clay, mixed with any cheap alkali, such as the waste of soap-boiling, and the slag from iron-smelting. The several articles are each reduced to powder, and then mixed and placed in crucibles, which are submitted to a high heat, for twelve or fifteen hours, during which time the glass is formed, and is then fit for the purposes required. The bottles are now almost invariably blown in a mould, which opens with a hinge and admits the mass of glass at the end of the rod, after which it is shut, and the pressure of the breath readily forces the glass into the shape of a lining for the mould, or into that of the particular bottle required. This glass, as now manufactured, is not so well adapted for the deposit of the crust of port wine as the old descriptions of glass, and hence old port wine bottles are more highly valued than new ones.

448. CROWN, OR WINDOW-GLASS, is made of fine purified sand and ground kelp, or sometimes, when required to be very white and free from flaws, of white sand, pearlash, saltpetre, borax, arsenic, and manganese. These are first separately ground, and then they are introduced into the crucibles with pieces of broken crown-glass, called *cullet*, and after thirty hours' heating in a furnace, the whole mass becomes transparent and converted into glass. The next thing is to reduce this into the thin layers which we use for windows, which is effected as follows:—The glass is first reduced in temperature, and the crude matter at the top is skimmed off. The workman then takes the iron tube and collects a sufficient quantity of glass for his purpose, after which he blows it into a pear-shaped hollow. This is then heated at the mouth of a furnace so as to allow of still further expansion, and by pressing its end against an iron bar it is rendered spherical instead of pear-shaped. This pressure repeated makes it still more flat, and upon this it is held over a box, the tube being in a horizontal position, whilst an iron rod called a *punty*, the end of which has been dipped in the melted glass, is applied to the side opposite to the tube, and readily adheres to it; but on the application of a piece of cold iron it is withdrawn, leaving a circular hole in the glass of about two inches in diameter. The glass and tube together now represent a trumpet-shaped instrument, and in this condition being held to the mouth of the furnace, and made to rotate slowly at first, but afterwards with considerable rapidity, the centrifugal force applied in this way causes the globe to expand and assume the form of a circular disk of glass, three or four feet in diameter, attached to the tube in the centre, and of uniform thickness, except where there is a lump called the bull's-eye. The tube now only requires to be detached, which is effected by the contact of a piece of wetted iron, after depositing the plate upon a table, and then the glass only wants annealing to be fit for use.

449. FLINT-GLASS, sometimes called crystal glass, received the name from being originally made of powdered flints. At present, however, fine white sand, which is flint in a state of natural sub-division, is always employed, together with lead in the shape either of litharge or red-lead, and purified pearlash. These materials are prepared by washing, &c., and they are then placed in the crucible and melted as before; but greater care is required in this operation, and in skimming the metal. When the glass is thoroughly melted, and has been allowed to cool to the desired temperature and consistence, it is moulded into shape by means of the tube as before, aided also by the punty. When this last is firmly fixed, which is not until the article has

been blown to the proper *size*, the tube is removed, and the rude glass vessel is held by the punty, kept warm by a furnace, and moulded by various tools into the shape required, all the time keeping up the circular shape by rotating it rapidly backwards and forwards upon the arms of a chair made for the purpose. With a pair of shears and compasses the workman also contracts the different points which his pattern requires, and in fact he turns out exactly the intended vessel, whatever that may be. After this the article has only to be detached from the punty, when it is fit for use after being annealed; but for highly ornamental purposes it must be ground and polished, being then called *cut glass*. Flint-glass, like bottle-glass, is also worked in moulds made in the way described under that head. They were formerly usually made of copper, but they are now sometimes of a composition which is better calculated for the purpose, and not so liable to chill the glass, so that the impression is sometimes almost as sharp as that in cut glass.

450. CUTTING is performed by means of wheels of various sizes and edges, some of which are of iron, others of stone, and some of wood. The iron wheel is the first used, and being supplied with sand and water, and rapidly revolving, it soon grinds away the part to be removed; the stone is next applied, which makes the surface finer, though still rough; and lastly, the wooden wheel, with the aid of putty or crocus powder, gives that beautiful polish which is admired so much in cut glass.

451. PLATE-GLASS is composed of sand, soda, lime, manganese, and cobalt, in proportions varying with every maker. These are melted with great care, the workmen watching that no air bubbles are introduced in stirring it; and finally, the clear part, after being skimmed, is poured off into another crucible, and then again heated to the proper consistency. When thus ready for casting, the table, which is the surface upon which the glass is to be rolled, is warmed by steam, and then with a crane and stage for the purpose, the crucible is brought over it, and the glass poured upon the stage, followed directly by a metal cylinder, which spreads the glass out to the proper thickness, being regulated by a metal rib at the sides. Twenty men, or more, are required for this operation when a large plate is to be cast; and the air in the room must be kept warm and free from currents. When the plate is annealed, it must be ground and polished, as its surface is by no means smooth, being cast upon a surface of fire-brick. To grind it, the plate is cemented to a large board by means of plaster of Paris, and then it is ground by rubbing it with the aid of machinery against a similar plate of glass, with a layer of sand and water between them. The polishing is effected by rubbing the plates with cushions or rubbers covered with crocus powder wetted. This kind of glass, besides its use for windows, already alluded to in Book I., is employed in furniture for those beautiful looking-glasses which reflect the image so marvellously well. The glass here has one side covered with an amalgam of mercury, by which a highly polished metallic surface is constantly presented to the eye, and serves all the purposes of a plate of metal protected from the action of the air by the glass in front of it.

452. ROUGH PLATE is merely an inferior quality of plate-glass, which is not ground or polished, and is used for purposes requiring great strength with a moderate admission of light.

SECT. 7.—CHINA AND EARTHENWARE.

453. THE VARIOUS WARES known as china and earthenware, are all compounds of clay with bone-earth, flint, and other similar materials, ground together and baked. According to the proportion of clay will be the toughness of the china, and the capability of being moulded, while the flint gives hardness, whiteness, and transparency, and the bone-earth increases those qualities. The following are the chief kinds of china used in the present day:—1st, *Oriental china*, including all the Chinese and Japanese makes; 2nd, *Dresden;* 3rd, *Sevres*, including other French kinds; 4th, the *English* varieties of transparent china or porcelain made at Worcester, and in the potteries of Staffordshire; 5th, *ironstone china;* 6th, *semi-porcelain*, made for chemical and cooking operations by Mr. Grainger, of Worcester; 7th, *earthenware*.

454. ORIENTAL CHINA is imported into this country from Japan and China, and is distinguished by its excessive transparency and the thinness of its walls in most cases; also, by the peculiar colours and style of painting. The Japan china is remarkable for its close and compact granular texture, its sonorous ring when struck, its flinty hardness, its fine surface, and its capability of bearing heat without cracking. The component parts of this china are little known, since the Chinese and Japanese keep secret, as far as possible, all the processes by which the clay is prepared; but it is supposed that they bestow from ten to twenty years in getting it into a state fit for baking. It is, therefore, chiefly by analysis that we have arrived at any conclusions as to the composition of the china from those sources; and it is well known that the Chinese

have themselves endeavoured to mislead those who have pryed into their secrets by affording incorrect information.

455. Dresden China is superior, in some respects, to Canton or Japan china, being equally transparent, white, and sonorous, while its forms are of much superior beauty. It is also more firm and compact in body; and from not shrinking perceptibly in baking, it is admirably adapted for modelling into figures, in which particular it is pre-eminent over all other similar wares.

456. The Sevres Manufactures are not so close or fine in the grain as those above alluded to, but they have a superior glaze, and are generally of elegant shape, with beautiful colours and magnificent gilding.

457. The English Kinds are greatly varied, being generally imitations of some one or other of the above varieties. Every manufacturer has some peculiarity which distinguishes him, and even from year to year he will vary his body, his glaze, and his style of painting. Hence it follows. that a manufacture which may have been highly prized some years ago is now one of the lowest in the market, and that the purchaser should be guided rather by the article itself, than by the name of the maker, or the locality where it was produced.

458. Ironstone and Stone China are very hard and tough kinds, but thick and with little or no transparency; they are chiefly used for dinner and chamber services.

459. The Composition of Grainger's Semi-porcelain is not known, but it is shown by proof to be admirably calculated for the purposes for which it was designed, and it resists the action of heat better than any other ware.

460. The Various Earthenwares known as *Wedgwood*, *delft-ware*, &c., are all used for common dinner services, and for cooking, and similar uses.

461. The Composition of China and Earthenware has been lately much benefitted by the light thrown on it by modern chemistry. This has enabled us to analyse more perfectly the bodies which constitute the best wares, and to determine the exact proportions in which they are combined. The requisite minerals for the composition of the best *hard* china are not very commonly met with in nature, while those required for common earthenware are almost everywhere to be found within a moderate radius. Silica and alumine, whether mechanically or naturally combined, do not vitrify together, although they more readily unite than any of the other earths; and in this union it is supposed that silica exercises the properties of an acid, and alumine those of a neutralizer similar to an alkali, though not strictly one. When they are properly combined in water, by means of a mill, a strong adhesion between their particles takes place, so that when dried, without baking, they form a solid and hard mass which does not crack; but when subjected to heat so as to dissipate all the water, the mass which results is durable, insoluble in water, firm, and unaffected by change of temperature.

462. The Silica employed in England is obtained by using the flints from the Sussex coasts, and from Antrim, in Ireland, the best being of a blackish colour. They are first calcined in a small kiln, then broken in pieces while hot and cast into water, in which they are ground down until the whole has the consistence of cream, with a density of 2 lb. per pint.

463. The Alumine is supplied from various kinds of clay. Two sorts from Bideford and two from the Isle of Purbeck are called *pipe-clay*. These have a greasy feel when moist, and when dry are porous and adhere to the tongue, from their great absorbing power. The *china clay* of Cornwall is an extremely white and impalpable powder, found in catchpools, where it is collected from the small streams which wash down broken pieces of the blocks of decomposed white granite. This clay requires washing, to remove the quartz and mica, which would prevent the fusing. All this clay is not equally good in quality; some has more potass in the felspar, and is moderately fusible at a white heat, while others remain refractory in any heat of the potter's oven. *Magnesian clay*, in an indurated state, as *soapstone* or *steatite*, and also in a plastic form, from its decomposition, is sometimes employed. It has a cream colour; a strong earthy odour; minutely foliated texture; slight greasy lustre; takes a polish from the nail; stains the fingers; is very friable, smooth, unctuous, and plastic to the touch; and on the tongue dissolves into a pulp free from all gritty particles. *Slate* and *shale clays* are also used for different purposes. The former is produced by the disintegration of the slates in their beds; the latter is obtained from the roofings of the coal strata, and a variety of it is met with in the floorings of the strata, and is called *clunch clay*. *Brick and tile clay* is the ordinary clay met with throughout the clay districts of England. To these may be added *bone earth*, which consists of bones boiled down to remove the gelatine, then calcined and ground.

464. Fritting is necessary for some of the compositions, though not for all, inasmuch

as in many cases mere mixing is sufficient. It is adopted in order to combine together all the principal ingredients, by subjecting them to a gradually increasing temperature, which, while it dissipates the aqueous and gaseous matters, effects the complete fusion and blending of the remaining particles. But in order to its success, the fusible components must be in definite proportions to the others, and then, unless this process was employed, the high point of the baking process might volatilise the alkali before complete fusion takes place. The *fritt* thus produced is ground into an impalpable powder, in which state it is mixed with the other ingredients, usually clays, in such proportions as not to interfere with the adhesiveness which is necessary for the various operations of throwing, moulding, or pressing.

465. When proper attention is paid to the proportions used, there is seldom any failure in the result, except in a few instances, out of many articles. But in order to meet the necessity for low prices, inferior wares are manufactured, and the consequence is, that however showy their surfaces may be, they do not stand heat, and are constantly liable to cause disappointment. Acids also affect the surface, and even the ordinary risk in packing is increased to a great degree.

466. The Processes of the manufacture are—1st, *preparing the body or the clay*; 2nd, *throwing it*; 3rd, *turning it*; 4th, *modelling or pressing, and adding the handles*; 5th, *baking into biscuit*; 6th, *painting or printing*; 7th, *glazing*; and 8th, *ornamentation of glazed ware.*

467. The Body, or Clay, is made in what is called a *slip-house*, which is a long apartment, containing vats for the various materials; and a *slip-kiln*, being a long trough about twenty feet long, four feet broad, and sixteen inches deep, in which is a brick flue, varying in thickness according to the distance of the part from the fire. There is also a *blunging-pan*, formed of flags placed edgewise, with a *blunger* formed from a stout ash plank, sawn into the form of a blade, the upper end having a cross handle firmly fixed, and the blade diminishing from about eight inches by two to six by one, and being from seven to nine feet long. The native clays are mixed with water till the fluid is of a certain density per pint, and resembles cream, and in this state it is poured through a sieve into a large vat. To this is added the requisite quantity of flint, or fritt, as the case may be; and in order to mix the whole thoroughly together, the fluid is pumped out of the vat into the slip-kiln, being again passed through a fine sieve. Here, by the heat of the flues, the mass is kept constantly boiling, until it is reduced to the proper degree of thickness. The slip-maker judges of this by cutting out portions and examining them, and when quite fit it is removed to an adjoining room, where it goes through the next process, called *slapping*, which is done with a spade of a peculiar form, and is a kind of tempering, to deprive the clay of all particles or bubbles of air. After this it is carried into a vault, until required by the workmen for throwing, modelling, or pressing.

468. Throwing is the ordinary process by which clay is made to assume hollow forms of a circular character; all others being produced either by pressing in moulds or by modelling. The *thrower* requires an *engine*, or *wheel*, revolving on a spindle, which turns vertically in a step, and is supported by a collar. On the upper end is fixed a circular piece of wood, called *the head*, which during the throwing has a horizontal rotary motion. The spindle is rotated either by a hand-wheel or by machinery, and on it are fixed pullies of various sizes, by which its velocity is increased or diminished, to suit the views of the thrower. At a strong bench near the thrower is a *baller*, generally a young woman with a large lump of the clay before her; from this, with a piece of wire, she continually occupies herself in cutting off a piece, and then slapping it down again, so as to complete the solidification of the mass which was begun in the slapping. This is called *balling*. When the thrower requires it she is ready with a piece of definite size, sometimes weighed, which she hands to him in the form of a ball. The thrower sits on a seat in the corner of a frame, with his feet on each side of the wheel-head, and his arms resting on his knees, keeping steady his hands while the clay is moulded. On the side of the frame he marks, by fixing a peg, the exact extent to which the clay is to be thrown; then taking it in his hand he casts it forcibly on the head, and, to expel all the air-bubbles, he forms it into a conical pillar, again and again alternately raising and depressing it by the palm of the hand. Finally, he moulds it with his hands, one on the inside and the other on the out, into the desired form, finishing it off with a *wage*, or pattern, formed of glazed earthenware, and cutting it from the head by a piece of brass wire. The baller then hands him another piece of clay, and dexterously lifts the thrown vessel from the head, and places it on a board to dry.

469. Turning this vessel, when dry, is performed with a lathe, similar in principle to those for ordinary use; by means of which and tools for the purpose he reduces the thickness of the clay, and cuts ridges or

grooves when necessary. When common wares are to receive rings of different colours, he proceeds as follows:—Having rendered the vessel smooth and of the proper shape by his tools, he immerses it in a proper mixture, or applies this to it with a sponge, and places it to dry while he proceeds with others. When ready, he fixes it in the chuck of the lathe, and with a tool takes off those parts which are to appear of the colour of the ground, leaving as much as he pleases of the coloured composition.

470. In Modelling great art is required, part of the process being executed in ordinary clay, and cast in plaster of Paris, so as to obtain a number of repetitions in the china-clay, while the more delicate parts are added by the modeller to each article. Thus, supposing an elaborately-dressed figure to be executed in china, the modeller would first execute a clay-model without those parts of the dress which are in very high relief, as lace-work, &c.; this he would cast in plaster, and from the mould he would obtain, by pressing the clay into it, any number of china figures, which again he would heighten by adding to them with his tool the requisite finishing touches. For common figures this is not done, but for flower or fruit pieces, or highly-finished figures, this process is always adopted. Some years ago lace was a very common addition to dressed figures, and its elaborate execution at first was highly puzzling to the uninitiated, who greatly admired its exact imitation of real lace. This is not to be wondered at, because it originally consisted of this article which was dipped in the clay in a semi-fluid state, and then arranged about the figure, the process of baking destroying the lace entirely, but leaving the clay behind. It is a trick which is very effective, but very simple, like many others in the arts, and being so simple and *cheap*, it has been proportionately despised.

471. Pressing is another kind of casting, by which plates and dishes, and other flat articles, are rapidly formed, as follows:—The moulds are made in the usual way, and then ranged round the room upon shelves heated by flues so as to make them rapidly absorb the moisture from the clay. Provided with a number of these, called *mouds*, the workman fills them, one after another, with the clay, which he prepares beforehand in the form of *bats* or lumps of the proper size. These are squeezed into the mouds, and their inner surfaces smoothed off with a damp sponge, after which they are ranged on the shelves till the heat evaporates all the water, when the articles may be removed without losing their forms. In this way, also, handles and small ornaments are prepared, to be afterwards added by the means next to be described, called *handling*.

472. In Handling, the clay-man either prepares his handles, &c., by the above process, or by a box and screw for forcing the clay through an opening in a pipe, by which it is made to come out either as a bar with a certain shape or in the form of a tube. He next takes these pieces thus prepared, and with some wet *slip* he attaches them to the bodies, and then trims them by removing any superfluous clay.

473. Baking into Biscuit is the next process, by which the clay body is converted into a hard white insoluble substance, or in the inferior wares into the coloured body which each presents. An oven for this is required, being a cylinder ten or twelve feet high and from ten to fifteen feet in diameter, surmounted by a dome with a central aperture. This is composed of fire-brick, laid in a mixture of fine clay and sharp sand, with very close joints, so that after once being heated the whole mass becomes one solid brick. In this oven are from five to ten mouths, which are connected with flues in the hearth, and small openings are left by which the fireman, by means of a long rod, can draw his trials out so as to judge of the proper temperature. *Saggers*, in shape resembling band-boxes, are made of shale and slate clay, so as to resist the heat; in these the articles are placed, being protected from injury by pulverised grit-stone, which will not vitrify by any heat. The saggers are then piled on each other, and the oven is heated, previously closing the door-way with brick and clay. The baking requires nearly two whole days, or about 48 hours; after which the fires are withdrawn, and when cool enough the articles are taken out, and are then called biscuit-ware, being ready for the further process of painting, glazing, &c. Many pieces are bent or cracked, and they are classed as good, seconds, and thirds. Those which are uselessly cracked are thrown on one side as potsherds.

474. The Painting or Printing is the next stage, and is merely for ornament, not being necessary for any other purpose; and when not employed the biscuit is either left in its pure state of white, or it is glazed, still being of that delicate colour. Painting is done by the hand, the great art consisting in adapting the colours to what they will be when baked, for this completely changes them, so that often a painted flower before being baked is totally unlike what it will afterwards appear. In *printing*, the plan is much more simple; but as the plates and dishes to be printed are not plane surfaces, it requires a modification of the ordinary process. This is effected by printing upon

tissue paper, and then applying it to the plates, the particular process being called *blue printing*. The colours are mixed in oil, and are rubbed into the biscuit by a person called the *transferer*, who uses a rubber of flannel for the purpose; and after she has completed her task, she washes off the paper with soft soap and water, leaving the ware impressed with the oily colouring matter, which the water does not touch. In this way the common dinner services are printed, both on earthenware and china.

475. GLAZING requires a second baking, because being applied in a watery solution it would soften the clay too much, and also dissolve or mix the colours in the same way. The biscuit is too porous for common use, and requires the addition of the glaze, so that two bakings must be adopted with the intermediate colouring, either by painting or printing, and followed by enamelling or gilding, when these commoner ornamentations are insufficient for the tastes of the intended purchasers. In the early ages of English pottery, as carried on in Staffordshire, the dust of lead ore was sprinkled over the clay, followed by the application of manganese and the oven-heat. *Salt-glazing* was next tried, then *biscuit-dipping*, which, again, has been finally completed by the adoption of *fritting* in the preparation of the glaze. At first the materials for the glaze were ground together in a *raw* state; but, to ensure perfect transparency and freedom from defects, the above process was tried and found to answer the hopes of its projectors. But there is also a necessity for adapting the glaze to the body of the ware, since the contraction and expansion of the two must be identical, or the glaze will be defective, and refuse to combine with the body, from which it would result that it would either swell, craze, and scale off, leaving the adhering parts devoid of lustre, or else it might wave, and being rendered by the alkaline ingredients more fusible at a higher temperature than biscuit baking, the whole might sink into one vitrified mass, as too often happens.

476. THE COMPONENTS OF THE GLAZE are exceedingly various, but they should be always adapted so as to fuse by chemical affinity at the same heat, and flowing equally; readily combining also with the body without affecting the contraction of the vessel during the baking. When cold, the glaze should present a semi-opaque covering of a very pale cream colour; and for ornamental wares it must be clear, free from specks or bubbles, velvety in softness to the eye, while it should be capable of resisting the actions of acids and those sudden rises of temperature which are within the range of ordinary household emergencies. The ingredients must be of such a nature as to mix with water to the denseness and consistency of thick cream, and sufficiently adhesive that after the water is absorbed by the biscuit, the remaining layer will bear to be placed in the saggers without any portion falling off.

477. THE GLAZES are thus prepared and applied. Both the *fritt* and the *raw glazes* are ground to an impalpable powder, the former being partly fritted as for the fritting of the body materials. The grinding is performed in a handmill not unlike a circular washing machine, after which the glaze is put into *the dipping tub*, where, in order to prevent the heavier components from precipitating, constant stirring is required, and there is also added a certain quantity of salt for raw glazes, or of muriatic acid for fritt glazes, in order to increase the density of the water and thus to sustain the powders. The *dipper* now having his glaze ready prepared, receives the articles in succession, and immerses each in the fluid, taking care to cover the whole surface equally, but thinly. They are then placed aside to dry, and afterwards baked in saggers, from which they are separated by a variety of stilts, triangles, &c. The temperature is a white heat within the oven, and as soon as the glaze is vitrified, the fires are withdrawn and the whole is left to cool ready for the warehouse.

478. THE FURTHER ORNAMENTATION OF GLAZED WARE includes *black printing*, *lustring*, *enamelling*, and *gilding*. Black printing is the term for applying impressions *after* the glaze, whether the colours are black, red, or gold. The copper plates are engraved in a style differing from those employed in *blue* printing, and the colours also vary in components and preparation. Instead of using paper for taking off the impression, the black printer uses *glue-bats*, prepared by dissolving glue, and running it in thin layers or plates, technically called *papers*. The printer rubs his colour in an impalpable powder, in a saucer, with a lock of well dried carded cotton. He next rubs some linseed oil mixed with turpentine into the engraved plate, and presses this firmly against the glue-paper, which takes up the oil, and is then applied to the ware with some little force. The oil adheres to the surface of the ware in the form designed upon the plate, and this oily pattern is finally dusted with the cotton, covered with the powdered colour, which adheres to it, leaving the part, not oiled, free. When the several glue-papers have been applied, and the oil has had time to dry, the workman, with a piece of silk,

removes any blemishes or adhering pieces of dirt or colour, and the piece is then fit for the *muffle*, in which it is yet again to be submitted to the fire. *Lustring* is the formation of that general metallic coat which, if it were not so cheap, would be considered very beautiful, and which gives to earthenware either a gold, silver, or steel appearance. The body is generally of common brick-clay mixed with blue clay and black marl, properly prepared by blunging, and then biscuit-baked, and covered with a bronze glaze; upon this the lustre composition is applied. Various metallic oxides are dissolved in acids, and then applied to the surface with the addition of spirits of turpentine. A hair-pencil is used for this purpose, by which the composition is spread, after which they are baked. *Enamelling* of china and earthenware has now been practised for nearly one hundred years, and by its means colours are applied which are vitrifiable at a heat below that which will affect the glaze. The enamels are formed of a transparent and fusible glass, which, in order to impart the necessary tint, has combined with it certain metallic oxides, as, for instance, the oxide of gold for purple and rose-colour; oxide of silver for yellow; cobalt for blue; copper for greens and blacks; antimony for yellow; umber for black and brown; platinum for steel and silver; manganese for violet; chrome for red and pomona green; and several salts of iron for red, brown, and black. After being properly dried and ground in a mill, each colour is again rubbed on a very hard stone, and afterwards used with spirits of turpentine and hair-pencils. In order that the enamel may answer, the glaze must be suited to it, or else the design will come out of the muffle a mere sketch; the flux must bake at the same heat as the glaze to preserve the brilliancy of the metallic base, and neither craze nor scale off. The artist's efforts require great experience, inasmuch as he is using colours which come out finally far different from the state in which he lays them on; and very often several bakings are required to bring out his efforts at their highest pitch. *Gilding* is effected somewhat in the same manner as the last-mentioned art, using with a pencil the proto-muriate of gold suspended in spirits of turpentine. Sometimes gold is applied by *ground-laying*, as follows:—Well-boiled linseed oil, turpentine, and red-lead are mixed and laid on in the desired pattern with a fine brush; the artist then applies the powder for the enamel colour with one-tenth additional flux, and carefully adjusts the coating so that all the parts may be equally covered. This is then baked in the muffle, and the gold colour makes its appearance. The muffle for baking ornamented glazed-ware is of a size in proportion to the quantity usually in demand, and is constructed so as to prevent any vapour entering from the fuel. Considerable judgment is required for properly placing the articles in this kiln, some requiring a greater heat than others, and therefore being arranged accordingly. After the final heating in the muffle the articles are ready for sale, with the exception of the gilding, which requires *burnishing* with agate and bloodstone.

SECT. 3.—TEXTILE FABRICS.

479. TEXTILE FABRICS, as used in our houses, comprise the three following kinds: 1st, *carpets and rugs*; 2nd, *window-curtains*; and, 3rd, *house and table-linen*.

480. CARPETS AND RUGS are now made in a great variety of modes, and with almost an infinite number of shades and colours. In Great Britain it is almost universally the custom to cover the whole floor of the sitting-rooms with carpet, and generally that of the bed-rooms, with the exception of the part beneath the bed, though in some cases only a strip of carpet is laid round the bed, and in front of the wash-hand stand. This last practice is adopted by some from economical motives, and by others from an idea that when the boards are covered by carpet the floors cannot be kept so clean as when they are exposed. Where Turkey carpets are introduced a margin is left all round, which is sometimes covered with floor-cloth, or, if the boards are of oak, there is no occasion to hide the beautiful appearance which this wood presents. With very few exceptions, carpets may be said to present a coloured surface of wool, with or without a groundwork of flax. This woollen surface is either uncut, as in Brussels carpets, or else cut in the manner of velvet, as in Turkey, Axminster, Wilton, and the velvet-pile carpets. The uncut carpets are very various in the mode of their manufacture; some having a webbing of flax intermixed with a woof of wool, which is raised on one side to produce the pattern, as in the Brussels and tapestry carpets; while others, as the Kidderminster and Scotch carpets, are woven with nothing but wool. The Venetian carpets, again, are like the Brussels, a compound of flax and wool; but both their faces are equally covered with the wool, and they can only be produced in stripes. Druggets and felts are, again, a lower description of carpeting, which will presently be described in due order.

481. TURKEY AND PERSIAN CARPETS are always made in squares, generally oblong

and with a border surrounding them. They are accompanied by rugs of similar make and colours, and are well suited to dining-rooms, being warm to the feet, and bearing the wear and tear of numbers for very many years. They present a cut surface of wool, and they are generally compounded of the primitive colours, with a preponderance of green, blue, and red. They are imported in large numbers, of all sizes, down to 12 feet by 8 or 9 feet, which is, I believe, the smallest in the market. These carpets are capable of being renovated by shearing, after which they present the appearance of being new; and in some cases, if the operation has been done with care, they will bear a repetition of it with advantage.

482. THE AXMINSTER CARPETS are an imitation of the Turkish, and closely resemble them in every respect, except in pattern and colour, in which they are somewhat richer. They are made almost entirely by hand, the machinery having been little improved in the last one hundred years, and consequently their price is very high, even more so than a corresponding carpet of Turkish or Persian make. The price of these kinds will vary from 18s. to 25s per square yard, according to size, pattern, and colour, and to the thickness of the pile.

483. THE WILTON AND VELVET-PILE CARPETS are made by weaving a foundation of flax-thread, and introducing at the same time a number of woollen threads of various colours, in such a way that they rise up in little bows on one side; these are afterwards cut, and form a short velvety surface, resembling a kind of miniature Turkey carpet, that is, similar in the sort of surface, but finer and thinner in texture. They are also not so expensive, being now made at about two-thirds of the price mentioned above; but being made in breadths about three-quarters wide, and sold at about 8s. per yard on the average, they appear at first sight much cheaper, relatively, than they really are.

484. BRUSSELS CARPETS are made on the same principle as the above, but their pile is uncut. They are called *three thread* when each loop consists of three woollen threads, and *two thread* when of two only; the latter being adopted for cheap carpets and very common use, and in wear soon leaving the foundation bare of all wool. These carpets are also made in three-quarter widths, and are sold at all prices, from 2s. 4d. to 5s. per yard.

485. TAPESTRY CARPETS are woven like the Brussels, but the woollen threads, of which they are composed, are dyed in short lengths, each being red, blue, or green, for a few inches, and then another colour for a short length, and so on. By this mode the thread is not dropped in weaving according to the pattern, but is continued throughout from end to end, the pattern being made out by the change of colour in each thread; and as these are not abruptly finished off, but shaded one into the other, so the carpets themselves have a shaded appearance very different from the sharp lines of the Brussels carpet. This was, at first, considered a great beauty, but better taste has prevailed, and fashion now condemns them as much as at first they were raised into its favour. Their price is now about the same as that of the Brussels carpet, but they are little used, and will probably soon be out of the market.

486. THE KIDDERMINSTER AND SCOTCH CARPETS are woven on the principle of damask patterns, all being of wool, and the pattern being effected by arranging and interchanging two colours, so that while one predominates on one side, the other shows itself on the other. They have little substance and soon wear out; their low price being their only advantage. They are made in widths of a yard, and are sold at about 3s. per yard, or sometimes even below that price.

487. DUTCH, and similar English carpets, are made somewhat on the same principle as the Kidderminster, but with a woof of flax. They are more harsh to the foot, but wear better, and are of about the same price.

488. VENETIAN CARPETS are composed of a woof of flax, with a web of woollen threads showing on both sides. They are only capable of being made in stripes, and are used for stair carpets, and for the bedside also. They are of several widths to suit narrow and wide stairs, and of all prices.

489. DRUGGET is a coarse kind of cloth, woven like flannel, and used either self-coloured, or with a printed pattern. It wears about as well as the common kinds of carpets, and is sold at about 2s. per yard.

490. FELT is wool of a short staple, matted together without weaving. Like drugget, it is printed, and sometimes in very neat and suitable patterns; but it wears badly, not equalling drugget in that respect. It is of all widths, patterns, and prices.

491. A COCOA-NUT MATTING is now sold extensively for offices, halls, and kitchens, either of a plain self colour or with borders coloured. It is very durable and cheap, and is admirably adapted for rough work. The price is 1s. to 2s. 6d. per yard, according to quality and width. It is made of all widths, from half a yard up to a yard and a quarter.

492. HEARTH RUGS are all made on the principle of the Axminster carpet, with a

foundation of flax, in which tufts of wool are woven, and then cut. But many of them are made with a large proportion of flax introduced with the wool, and the foundation very badly put together. The price accordingly ranges from 3s. or 4s. to £2 2s. or £3 3s. per rug, and the wear and appearance are in proportion to the price.

493. **Door Mats** are similar in construction, except in the case of skins, which are either from the sheep, the buffalo, or some other animal with a similar fleece or hair, tanned and dried. Hemp door mats are very serviceable for the outer door, in removing the sand accumulated from the streets.

494. **India Matting** is made from grasses, and is well adapted for laying down over carpets where the wear is unusually great, and for bed-rooms, or dressing-rooms, before wash-hand stands, &c.

495. **Floor-cloth** is a painted material, adapted to those floors which are subjected to much wet and dirt, such as halls, pantries, &c. They are made either in rolls of different widths, from five-eighths of a yard to a yard or more, or in large breadths fitted to the room which they are intended to protect. The foundation of these floor-cloths is either entirely of flax, as is the case when made on purpose, or else of part wool and part flax, as when old carpets are painted after being useless for their original intention. A strong oil paint, composed of white-lead and linseed oil, with a large proportion of litharge, is laid on smoothly for four consecutive coats, and then a pattern is printed by blocks on the same principle as is adopted for paper-hangings, the pattern being produced by metal projections fixed upon circular rollers, under which the cloth is drawn after it has received its coats of paint. These cloths require a long time to harden before they are fit for use. The price is from 2s. 6d. to 4s per square yard.

496. **Oil-cloths** are made on the same plan, but on much lighter and thinner canvas, covered with a fine oil paint and a more delicate pattern. They are chiefly used for table-covers, and are sold at very low prices, from 1s. per yard upwards.

497. **The most serviceable Carpet** for really hard wear is the Turkey carpet, which will last for a generation at the very least; but its high price, and its not being adapted for any room but the dining-room or library, excludes it from general use. The Brussels carpet probably comes next in point of utility, being, when well made, a most enduring floor-covering, and calculated to retain its woollen surface entire for about eight or ten years, with a tolerably severe trial of its qualities. The carpet with three threads is much more durable than that with two; and though in first cost considerably dearer, yet in the long run it is much more economical. All dyed woollen fabrics have a tendency to fade, and therefore carpets not only wear out from their woollen surface wearing away and leaving the linen foundation bare and visible to the eye, but the colour of what remains often becomes changed, depending in this respect greatly upon the particular dye which has been used. Browns and drabs generally last a long time, as do some of the reds; but crimson, blue, and green are very evanescent, and when exposed to a strong light, they seldom keep their original shade long. In this respect it is that the good make tells in wear, for if the carpet is ever so well woven, and the wool also of a good kind, yet if the dye has been bad the colour soon flies, and the carpet looks shabby and faded before it has been down a whole summer. Next to the Brussels, the Scotch and Kidderminster makes stand the best, being very good as far as colour goes, and being more particularly serviceable from their capability of being turned, so that when one side has faded the other will look fresh and clean. But the texture is fragile and thin, there is no substance to resist hard friction, and unless the floor is very even indeed holes are soon cut, corresponding with the raised edges of the boards. Venetian carpets are open to the same objections, though not equally so, as they have a linen foundation; but the ribbed surface very readily rubs through on any projecting ridge, as the edge of a stair; and therefore, though low in price, they can scarcely be considered economical; yet by good management in shifting them on the edge of the stair, they will last a great many years, and perhaps longer than an inferior Brussels carpet. The Axminster carpet wears as well as that from Turkey; but the Wilton and velvet-pile will not clip, when faded; and though the pile is long enough to bear a great amount of friction, yet the surface soon becomes faded and dirty, and is not to be recommended for hard wear on that account. Druggets and felts look showy and clean when first laid down, but the texture is not strong enough for anything more than a covering for carpets beneath them; and when laid upon bare boards they are by no means economical in the long run.

498. **The Planning and Making of Carpets** is generally charged by upholsterers at the rate of 8d. per yard, whether wide or narrow, as the seam is the part which takes the time. For this charge the exterior should be turned down and bound, the upholsterer charging extra for the binding-tape necessary for the purpose, though

sometimes this is included in the above price. Some little art is necessary to make the patterns match, but all that is requisite is for the person who is sewing the seam to fix the two selvages so that the patterns match regardless of any puckering which may occur, because this comes out in the straining necessary to the proper laying down of the carpet. In many instances a Brussels, or indeed, any other carpet, will be stretched so differently in different parts of the roll, that the pattern will not come together without puckering to the extent of some inches in the length of an ordinary room. Nevertheless, this must be done, and then the person who lays it down will have a task to perform in straining it, till at last the two appear perfectly smooth and a good match. The cutting out and planning require some practice and judgment to avoid waste, and few upholsterers take sufficient time or care to effect this object. In a long pattern, very often a considerable extent of the carpet is sacrificed, sometimes amounting to a tenth of the whole; whereas, with care, almost any carpet ought to be cut out without wasting more than a fifteenth part—that is to say, if a few small joins under parts out of sight are not objected to. Thus, under any piece of furniture, such as a cheffonier or pier-table, a join cannot possibly be detected, and may be inserted without affecting the appearance of the carpet; but no join ought to be allowed either where there is any traffic or where the surface of the floor is left exposed. The best and easiest plan is to clear out the room of all furniture, then to begin by cutting a length of carpet extending from one end of the room to the other, and placing this along that side which has the fewest indentations. The next piece will seldom unite with this without waste, but it will often come in opposite the fire-place or some recess, and then, after that is cut, the following breadth will perhaps come in as the second from the wall and so on. At last, perhaps, there may be only the width of half a breadth left to be covered, which the upholsterer will say requires a whole one; but in many cases, where the pattern is a geometrical one, the breadth may be divided down the middle, turned round, and then joined, by which a considerable saving is effected. The same applies to window-recesses, &c., which seldom take more than half a breadth, and in this way by fitting and contriving it is easy to avoid waste; though in effecting this object time is sacrificed, which may, perhaps, be as valuable as the carpet which would have been otherwise used.

499. The Laying Down of Carpets is effected by means of a hammer, small nails called tacks, and a stretcher. The last tool consists of a long wooden handle, ending in a wide fork, with very short prongs, which are capable of being stuck into the carpet with the aid of some little force. The first thing to be done is to lay the whole carpet down in its place, then taking the hammer and tacks and beginning at one corner, a few nails are put in, continuing the nailing along the side which corresponds with the cut ends of the breadths, and not with the selvage. The stretcher should be moderately used on this side, so as to avoid laying the carpet down too loosely, and at the same time taking care not to strain it unnecessarily. Then proceeding along the selvage side first planned in cutting it out, the tacks are to be driven in with a moderate use of the stretcher along the whole side. The upholsterer's men, who are in the habit of using this tool, are able to stretch the carpet with it, and then holding it against their breasts they insert the nails; but for those who try to save this expense, the better plan is for one person to stretch and another to nail as fast as he is ready for it. When the two sides have been nailed down, the next thing is to nail the side opposite to the first selvage, and finally the fourth side, where the main stretching is demanded. Here the seams will require to be gently extended to get rid of the puckers caused in the sewing, and to make the pattern match properly. In a room of twenty feet in length, a new Brussels carpet will stretch from four to six inches, and if this is not done it will never be smooth or look well, nor will it wear so well when in puckers and rucks, as if properly smooth to the foot. Care must be taken in all carpets—especially in those which have a stripe in the pattern—to avoid any unequal stretching in any part, and the pattern is here the best guide. If the first three sides have been carefully laid down, so that the pattern forms straight lines corresponding with these sides, the person who is laying the carpet down has only to look to the pattern in the last side to guide him in finishing his work, for if that is drawn out of straight lines, he must have used more force than proper in some part or other. It is seldom possible to judge exactly of the extent to which carpets require to be stretched, and therefore it is better to have this last side of the carpet unbound and raw, and to turn it in only as the side is nailed, leaving the sewing down and binding to the time when it is next taken up.

500. Window-curtains are now made in great variety, both of materials and manufacture, the principal difference being as to

the former, which consist chiefly of three—*silk*, *wool*, and *cotton*. Silk is employed in *damasks* and *tabarets* mixed with wool, the former being a flowery pattern of silk on a woollen foundation, whilst the latter is a satin stripe arranged in the same way as regards the composing materials. A species of *terry velvet* is also now used, in which the two materials are blended, and which makes a rich and elegant curtain; this is made also in wool without silk, and then called *repp*. When wool is used by itself it forms a *broad cloth* suited to dining-rooms, or a *damask* which is not so beautiful to the eye as the *silk damask*, but still sufficiently so for common purposes, or else a *moreen*, either plain or watered, or a *chelli*, which is a thin twilled material printed with chintz patterns. Cotton is made into a plain article, without anything but a mere web and woof, which, when printed and glazed, is called *chintz*. It is a very clean and light material for drawing and bed-rooms, but not calculated for the dining-room. It is not, however. nearly so cheap as it looks, because it requires lining, which is not the case with the moreens or damasks when intended for the common kinds of hangings. *Dimity* is a species of cotton manufacture used chiefly for bed-curtains, and very durable, though being white, sometimes with a coloured figure upon it, it soon shows the dirt. *Muslin*, both plain and figured, is introduced as a curtain during the summer months, chiefly because at those periods the power of the sun is such that all coloured materials fade very rapidly, and are therefore sadly injured by exposure to his rays. But muslin being white is none the worse for the most brilliant sun; and as it is not a very expensive substance, it is considered economical, in every sense of the word. Besides this, the protection of curtains is not really of any use except during the winter months, when they serve to prevent the cold draught of air which would otherwise chill the skin. This they do, not only by their serving as a real and absolute wall of partially air-tight material, but also by imprisoning between them and the window a stratum of air—one of our lowest conductors of heat, and in this way, with the shutters, producing a double layer of non-conducting material. Where the appearance of muslin is objected to as unfinished and cold, it is sometimes the practice to introduce it as a face to the ordinary material; that is, by showing a curtain of muslin on one side, and another of the winter materials on the other, taking care to place the former where the sun has most power; or, again, sometimes to throw back the coloured curtain and place a muslin one in front of it on *each side*. A *cotton net* and a material called *leno* are also used for the same purpose. The more costly kinds of damasks, broad-cloths, and tabarets are very expensive, ranging from £1 1s., or more, per yard down to 4s. or 5s.; and requiring in addition a lining at 1s. or 1s. 6d. a yard. *Woollen damasks* and *moreens* are sold at from 9d. to 1s. 6d. per yard, and chintz at prices varying from 3d. to 1s., but the cheap chintzes seldom wash well, and are therefore dear at any price.

501. SOFAS, CHAIRS, &c., are sometimes covered with the same material as the curtains, and at others with some produce of the needle, the result of the industry of the ladies of the family or their friends. This is called canvas or Berlin work, and is made with a blunt needle carrying coloured wools, and passed by the hand backward and forward through the open meshes of canvas sold for the purpose, by various stitches, the two most common of which are called tent-stitch and cross-stitch; the former is identical with the old tapestry.

502. HOUSE LINEN is rather a comprehensive term, embracing a list of table-cloths, napkins, towels, and sheeting, which are, or ought to be, of linen or flax, though sometimes improperly mixed with cotton. Besides these, there are sundry cloths for the servants' use, as kitchen-cloths, glass-cloths, dusters, &c., to which it is unnecessary further to allude here. The great superiority in the wear of flax over cotton, and also in price, renders it the object of the purchaser to ensure its presence, and of the seller to substitute cotton in its place. The detection of this imposition requires considerable practice, but the greater transparency of flax, and its giving a more complete sensation of cold to the touch, mark its peculiarities in a striking manner. Cotton is more pearly white and opaque, and it is much warmer to the touch than linen, which also is specifically heavier. In spite, however, of all these aids to the choice, a great deal of cotton is continually introduced with the flax, and especially in the figured or damasked linens, known as table and napkin damasks, diapers, &c.; and, in fact, it is only by trusting to the respectability of the seller that the inexperienced housekeeper can hope to escape imposition. Indeed, this is the best protection even to those who have passed through the apprenticeship, by supplying their houses for a long period. Table-cloths for the kitchen are generally made of unbleached cotton diaper; but coarse linen or huckaback will eventually be found cheapest, as it will last much longer. There should be a sufficient number of kitchen towels of different sorts to suit different purposes. For instance, there may be half a dozen rolling towels of coarse

thick linen; a dozen smaller towels of the same quality, each being a yard in length; and a dozen towels of common thin linen diaper, for wiping glasses, china, &c. Pudding-cloths are best when of very thick linen (for instance, Russia sheeting), and made square; dumpling-cloths the same, but smaller. Jelly bags are generally of white flannel; when quite new, they must be well washed before using, to get out all the grease of the wool. They are made of a square of flannel, doubled like a half handkerchief, so as to be wide at the top and pointed at the bottom; the side being sewed up in a strong seam, and the top or mouth hemmed, with three tape loops sewed to it, by which, when in use, it is suspended to the legs of a table, or to a wooden frame made for the purpose. Scouring flannels or rubbers should be strong and coarse. If made on purpose, it is well to hem them slightly all round, to prevent their ravelling. The same should be done with new dusters, which are better of cotton than of linen, being softer. Table and bed linen form a serious portion of the expense of first furnishing a house; but if bought of the best quality, and in as large quantities as prudence will permit, it will be some time, if carefully used, before they need renewing. The best plan is to allot a small sum every year to add something to the stock, and thus keep it up. A napkin-press is one of those essential articles for domestic comfort and economy that it is always prudent to purchase, as no table-cloth, after being spread two or three times, is fit to be used unless taken from a press. All table-cloths and napkins should be examined before sent to the wash, that all thin places may be darned, and thus prevented from breaking into holes.

SECT. 9.—MATTRESSES, BEDS, AND STUFFED-SEATS.

503. In order to protect the skin from the effects of contact with hard matters like wood and iron, pads of some elastic material are used, which are denominated beds and mattresses, when used at night; and sofa, couch, and chair seats when employed during the day. For these purposes an elastic, yet yielding material is required, with a variation in its heat-conducting power, according to the season of the year, and the age of the individual. Thus, the infant and the aged, both of whom are slow in their development of vital heat, require the slowest conductor that can be procured, and especially in the winter season. On the other hand, the middle-aged are well supplied with heat, and in the summer overdone with it; and for them the same material which is suited to the first and last periods of life is much too warm and relaxing. In the order of their conducting powers the various materials for stuffing stand as follows, beginning from the warmest or the slowest conductor:—1st, *down*; 2nd, *feathers*; 3rd, *wool*; 4th, *wool flock*; 5th, *hair*; 6th, *cotton flock*; 7th, *cocoa-nut fibre*; 8th, *alva marina*; 9th, *paper shavings*; 10th, *straw*; and, 11th, *spring mattresses*. Hence, it follows that the two first are peculiarly fitted for the protection of the young and the old, while wool and hair holding an intermediate position, are well adapted for robust persons of middle age. Where a particularly cool mattress is required, as for those who perspire very freely, or for warm climates, the alva marina and paper shavings are the best materials; and as the last mentioned may everywhere be obtained, it is often a very grateful addition to the comforts of the invalid. Feathers and down were formerly almost universally employed for beds in this country, but their place is now very often supplied by hair or wool, which, when well made into mattresses, affords a sufficiently soft material to prevent soreness, while it is not hot enough to encourage perspiration. Wool mattresses, when well made, are exceedingly healthy and pleasant to lie upon, though at first they feel rather hard and unyielding to those who have been always accustomed to feathers; but by placing a spring mattress beneath they are rendered yielding enough for any one, yet still rather cool to the sensations. Hair is not nearly so warm even as wool; and when placed upon springs or straw palliasses, it is almost too cold for the winter season in this climate. All beds in France are opened and cleaned once a year, and the wool of the mattresses is picked with the hand, so that all those lumps which in this country are so annoying are there never met with. It is a great luxury to meet with a good French bed in England; but the method of making them and keeping them in good order is every year becoming better known, and more generally practised. Beds and mattresses are made up in a strong material, called *tick*, which is either of cotton or linen, the latter being stronger and more durable, but dearer.

504. The prime cost of all the materials connected with beds and bedding, except the sheets, will be found comprised under the following tables, which give the prices of those articles as sold by the well-known London firm of Heal and Son, in Tottenham Court Road. They may, I believe, be obtained at cheaper marts, and by some makers they are also sold at a higher rate, but their list will serve as a guide to the medium prices in this department.

PRICE OF BEDS, BOLSTERS, AND PILLOWS.

PLAIN BEDS FOR SERVANTS.

POULTRY FEATHERS (11d. per lb., in Cotton Ticks).					GRAY GOOSE (1s. 4d. per lb., in fine Cotton Ticks).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in.				£ s. d.				£ s. d.
3 0	22 lbs. 25s.	4 lbs. 5s.	2 lbs. 2s. 9d.	1 12 6	18 lbs. 30s.	3½ lbs. 6s. 6d.	2 lbs. 3s. 6d.	2 0 0
3 6	27 lbs. 31s.	4½ lbs. 6s.	2 lbs. 2s. 9d.	1 19 9	23 lbs. 37s.	4½ lbs. 7s. 6d.	2 lbs. 3s. 6d.	2 8 0
4 0	33 lbs. 36s.	5½ lbs. 7s.	2 pillows 4 lbs. 5s. 6d.	2 8 0	28 lbs. 45s.	5 lbs. 9s.	2 pillows 4 lbs. 7s.	3 1 0
4 6	36 lbs. 40s.	6 lbs. 7s. 6d.	4 lbs. 5s. 6d.	2 13 0	32 lbs. 50s. 6d.	5½ lbs. 9s. 6d.	4 lbs. 7s.	3 7 0

FOREIGN GRAY GOOSE (1s. 10d. per lb., in Linen Ticks).									
Width.	Bed.	Bolster.	Pillow.	The Set.	Width.	Bed.	Bolster.	Pillow.	The Set.
ft. in.				£ s. d.	ft. in.			2 pillows	£ s. d.
3 0	18 lbs. 42s.	3½ lbs. 9s.	2½ lbs. 5s. 6d.	2 16 0	4 0	28 lbs. 63s.	5 lbs. 12s 6d.	4½ lbs. 11s.	4 6 0
3 6	23 lbs. 53s.	4½ lbs. 10s. 6d.	2½ lbs. 5s. 6d.	3 9 0	4 6	32 lbs. 71s.	5½ lbs. 13s. 6d.	4½ lbs. 11s.	4 15 0

BORDERED BEDS.

FOREIGN GRAY GOOSE (1s. 10d. per lb., in Linen Ticks).					BEST GRAY GOOSE (2s. 2d. per lb., in fine Linen Ticks, and Gray Down Pillows).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in.				£ s. d.				£ s. d.
3 0	20 lbs. 43s.	3½ lbs. 9s.	2¾ lbs. 5s. 6d.	3 2 0	20 lbs. 60s.	3½ lbs. 11s.	2lbs. at 3s. 6d. 9s.	4 0 0
3 6	25 lbs. 50s.	4½ lbs. 10s. 6d.	2¾ lbs. 5s. 6d.	3 15 0	25 lbs. 70s.	4½ lbs. 13s.	2 lbs. 9s.	4 12 0

BORDERED BEDS (*continued*).

	FOREIGN GRAY GOOSE (1s. 10d. per lb., in Linen Ticks).				BEST GRAY GOOSE (2s. 2d. per lb., in fine Linen Ticks, and Gray Down Pillows).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in. 4 0	30 lbs. 70s.	5 lbs. 13s. 6d.	2 pillows 4½ lbs. 11s.	£ s. d. 4 13 0	30 lbs. 84s.	5 lbs. 15s.	2 pillows 4 lbs. 18s.	£ s. d. 5 17 0
4 6	35 lbs. 80s.	5½ lbs. 13s. 6d.	4½ lbs. 11s.	5 4 0	35 lbs. 96s.	5½ lbs. 16s.	4 lbs. 18s.	6 10 0
5 0	40 lbs. 90s.	6 lbs. 15s.	5½ lbs. 14s.	5 19 0	40 lbs. 106s.	6 lbs. 17s. 6d.	5 lbs. 22s.	7 7 0
5 6	47 lbs. 106s.	6½ lbs. 16s.	5½ lbs. 14s.	6 16 0	47 lbs. 126s.	6½ lbs. 20s.	5 lbs. 22s.	8 8 0

	WHITE GOOSE (2s. 6d. per lb., in sup. Linen Ticks, and Gray Down Pillows).				BEST DANTZIC WHITE GOOSE (3s. per lb., in sup. Linen Ticks welted, and White Down Pillows).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in. 3 0	20 lbs. 66s.	3¾ lbs. 13s. 6d.	2½ lbs. at 3s. 6d. 11s.	£ s. d. 4 10 0	20 lbs. 80s.	3¾ lbs. 15s.	2¼ lbs. at 6s. 16s.	£ s. d. 5 11 0
3 6	25 lbs. 81s.	4½ lbs. 16s.	2½ lbs. 11s.	5 8 0	25 lbs. 97s.	4½ lbs. 18s.	2¼ lbs. 16s.	6 11 0
4 0	30 lbs. 97s.	5½ lbs. 18s. 6d.	2½ lbs. 11s.	6 6 0	30 lbs. 114s.	5½ lbs. 21s.	2¼ lbs. 16s.	7 11 0
4 6	35 lbs. 110s.	6 lbs. 21s.	2 pillows 5 lbs. 22s.	7 13 0	35 lbs. 131s.	6 lbs. 24s.	2 pillows 4½ lbs. 32s.	9 7 0
5 0	40 lbs. 124s.	6½ lbs. 22s.	5 lbs. 22s.	8 8 0	40 lbs. 146s.	6½ lbs. 25s.	4½ lbs. 32s.	10 4 0
5 6	47 lbs. 145s.	7¾ lbs. 25s.	6 lbs. 27s.	9 17 0	47 lbs. 173s.	7¾ lbs. 28s.	5½ lbs. 40s.	12 0 0

Price of Mattresses.

	3 ft.	3ft 6in	4 ft.	4ft 6in	5 ft.	5ft 6in	6ft. by 6 ft. 10
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Palliasses	9 0	10 0	11 0	12 0	14 0	16 0	—
Best ditto, in fine canvas and linen tick borders	12 0	13 0	14 0	15 6	18 0	20 0	24 0
Alva marina (prepared sea-weed), in fine canvas and cotton tick borders ...	11 0	12 6	13 6	15 0	17 0	—	—
Bordered flock, under mattresses for servants' beds	9 0	10 6	11 6	12 6	—	—	—
Best ditto, in fine canvas cases, preferable to palliasses, on iron or sacking bottoms	12 6	14 6	16 6	18 0	21 0	—	—
Ditto ditto, extra thick, ditto	14 6	17 0	19 0	21 0	24 0	27 0	32 0
Coloured wool, good serviceable mattresses, short wool from carpets ...	17 6	19 0	22 0	24 0	28 0	32 0	38 0
Ditto, ditto, extra thick, ditto	20 0	23 0	26 0	29 0	33 0	37 0	44 0
Second white wool, in linen cases, short wool from blankets	26 0	30 0	34 0	38 0	44 0	50 0	58 0
Best white wool, in linen cases, best long wool mattresses	48 0	56 0	64 0	72 0	83 0	93 0	105 0
Upper ditto, to use over feather-beds, very thin, in fine brown holland cases	32 0	37 0	42 0	46 0	50 0	56 0	66 0
Thin best French, best long wool in check cases, to lay over German spring mattra.	40 0	47 0	53 0	60 0	66 0	73 0	84 0
Best French, best long white wool and best horse hair in twilled check cases	51 0	58 0	66 0	74 0	86 0	98 0	114 0
Ditto, extra thick, ditto	60 0	70 0	80 0	90 0	102 0	115 0	135 0
Second horse hair	37 0	42 0	48 0	54 0	63 0	70 0	82 0
Best ditto, in linen ticks	51 0	58 0	66 0	74 0	86 0	98 0	114 0
Spring mattress, in a wooden frame and cotton case	46 6	53 0	58 0	63 0	70 0	78 0	96 0
Best ditto, ditto, the top stuffing all horse hair	70 0	80 0	90 0	100 0	110 0	120 0	140 0
*Best German spring mattress	84 0	98 0	112 0	126 0	140 0	154 0	178 0

Spring mattresses made to fold in half, 10s. extra.

* This mattress being made without a frame at the sides, is softer and more luxurious than the ordinary spring mattress.

Price of Mattresses for Cribs and Children's Bedsteads.

Quality.	Bassinet Mattress and Pillow.		1 ft. 9 in. by 3 ft. For Swing Cots.	2 ft. by 4 ft.
	2 ft. 6 in. long.	2 ft. 8 in. long.		
	s. d.	s. d.	s. d.	s. d.
Best flock	—	—	—	6 6
Coloured wool	—	—	—	8 6
Second white wool	6 6	7 6	9 0	12 0
Best white wool	11 0	12 6	15 0	22 0
Second horse hair	8 0	9 0	12 0	17 0
Best horse hair, or best French	11 0	12 6	15 0	22 0

Quality.	2 ft. 6 in. by 4 ft. 6 in., or 2 ft. by 5 ft.	2 ft. 6 in. by 5 ft. 6 in.	2 ft. 6 in. by 6 ft., or 3 ft. by 5 ft.
	s. d.	s. d.	s. d.
Best flock	9 0	10 6	11 0
Coloured wool	11 6	14 0	15 0
Second white wool	16 6	20 0	22 0
Best white wool	31 0	39 0	42 0
Second horse hair	24 0	29 0	31 0
Best horse hair, or best French ...	31 0	39 0	42 0

BORDERED BEDS (*continued*).

	FOREIGN GRAY GOOSE (1s. 10d. per lb., in Linen Ticks).				BEST GRAY GOOSE (2s. 2d. per lb., in fine Linen Ticks, and Gray Down Pillows).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in. 4 0	30 lbs. 70s.	5 lbs. 12s. 6d.	2 pillows 4½ lbs. 11s.	£ s. d. 4 13 0	30 lbs. 84s.	5 lbs. 15s.	2 pillows 4 lbs. 18s.	£ s. d. 5 17 0
4 6	35 lbs. 80s.	5½ lbs. 13s. 6d.	4½ lbs. 11s.	5 4 0	35 lbs. 90s.	5½ lbs. 16s.	4 lbs. 18s.	6 10 0
5 0	40 lbs. 90s.	6 lbs. 15s.	5½ lbs. 14s.	5 19 0	40 lbs. 106s.	6 lbs. 17s. 6d.	5 lbs. 22s.	7 7 0
5 6	47 lbs. 106s.	6½ lbs. 16s.	5½ lbs. 14s.	6 16 0	47 lbs. 126s.	6½ lbs. 20s.	5 lbs. 22s.	8 8 0

	WHITE GOOSE (2s. 6d. per lb., in sup. Linen Ticks, and Gray Down Pillows).				BEST DANTZIC WHITE GOOSE (3s. per lb., in sup. Linen Ticks welted, and White Down Pillows).			
Width.	Bed.	Bolster.	Pillow.	The Set.	Bed.	Bolster.	Pillow.	The Set.
ft. in. 3 0	20 lbs. 66s.	3½ lbs. 13s. 6d.	2½ lbs. at 3s. 6d. 11s.	£ s. d. 4 10 0	20 lbs. 80s.	3½ lbs. 15s.	2½ lbs. at 6s. 16s.	£ s. d. 5 11 0
3 6	25 lbs. 81s.	4½ lbs. 16s.	2½ lbs. 11s.	5 8 0	25 lbs. 97s.	4½ lbs. 18s.	2½ lbs. 16s.	6 11 0
4 0	30 lbs. 97s.	5½ lbs. 18s. 6d.	2½ lbs. 11s.	6 6 0	30 lbs. 114s.	5½ lbs. 21s.	2½ lbs. 16s.	7 11 0
4 6	35 lbs. 110s.	6 lbs. 21s.	2 pillows 5 lbs. 22s.	7 13 0	35 lbs. 131s.	6 lbs. 24s.	2 pillows 4½ lbs. 32s.	9 7 0
5 0	40 lbs. 124s.	6½ lbs. 22s.	5 lbs. 22s.	8 8 0	40 lbs. 148s.	6½ lbs. 25s.	4½ lbs. 32s.	10 4 0
5 6	47 lbs. 145s.	7½ lbs. 25s.	6 lbs. 27s.	9 17 0	47 lbs. 173s.	7½ lbs. 28s.	5½ lbs. 40s.	12 0 0

PRICE OF MATTRESSES.

	3 ft.	3ft 6in	4 ft.	4ft 6in	5 ft.	5ft 6in	6ft. by 6 ft. 10
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Palliasses	9 0	10 0	11 0	12 0	14 0	16 0	—
Best ditto, in fine canvas and linen tick borders	12 0	13 0	14 0	15 6	18 0	20 0	24 0
Alva marina (prepared sea-weed), in fine canvas and cotton tick borders ...	11 0	12 6	13 6	15 0	17 0	—	—
Bordered flock, under mattresses for servants' beds	9 0	10 6	11 6	12 6	—	—	—
Best ditto, in fine canvas cases, preferable to palliasses, on iron or sacking bottoms	12 6	14 6	16 6	18 0	21 0	—	—
Ditto ditto, extra thick, ditto	14 6	17 0	19 0	21 0	24 0	27 0	32 0
Coloured wool, good serviceable mattresses, short wool from carpets ...	17 0	19 0	22 0	24 0	28 0	32 0	36 0
Ditto, ditto, extra thick, ditto	20 0	23 0	26 0	29 0	33 0	37 0	44 0
Second white wool, in linen cases, short wool from blankets	26 0	30 0	34 0	38 0	44 0	50 0	58 0
Best white wool, in linen cases, best long wool mattresses	48 0	56 0	64 0	72 0	82 0	92 0	105 0
Upper ditto, to use over feather-beds, very thin, in fine brown holland cases	32 0	37 0	42 0	46 0	50 0	56 0	66 0
Thin best French, best long wool in check cases, to lay over German spring mattrs.	40 0	47 0	53 0	60 0	66 0	72 0	84 0
Best French, best long white wool and best horse hair in twilled check cases	51 0	58 0	66 0	74 0	86 0	98 0	114 0
Ditto, extra thick, ditto	60 0	70 0	80 0	90 0	102 0	115 0	135 0
Second horse hair	37 0	42 0	48 0	54 0	63 0	70 0	82 0
Best ditto, in linen ticks	51 0	58 0	66 0	74 0	86 0	98 0	114 0
Spring mattress, in a wooden frame and cotton case	48 6	53 0	58 0	63 0	70 0	78 0	96 0
Best ditto, ditto, the top stuffing all horse hair	70 0	80 0	90 0	100 0	110 0	120 0	140 0
*Best German spring mattress	84 6	96 0	112 0	126 0	140 0	154 0	178 0

Spring mattresses made to fold in half, 10s. extra.

* This mattress being made without a frame at the sides, is softer and more luxurious than the ordinary spring mattress.

PRICE OF MATTRESSES FOR CRIBS AND CHILDREN'S BEDSTEADS.

Quality.	Bassinet Mattress and Pillow.		1 ft. 9 in. by 3 ft. For Swing Cots.	2 ft. by 4 ft.
	2 ft. 6 in. long.	2 ft. 8 in. long.		
	s. d.	s. d.	s. d.	s. d.
Best flock	—	—	—	6 6
Coloured wool	—	—	—	8 6
Second white wool	6 6	7 6	9 0	12 0
Best white wool	11 0	12 6	15 0	22 0
Second horse hair	8 0	9 0	12 0	17 0
Best horse hair, or best French	11 0	12 6	15 0	22 0

Quality.	2 ft. 6 in. by 4 ft. 6 in., or 2 ft. by 5 ft.	2 ft. 6 in. by 5 ft. 6 in.	2 ft. 6 in. by 6 ft., or 3 ft. by 5 ft.
	s. d.	s. d.	s. d.
Best flock	9 0	10 6	11 0
Coloured wool	11 6	14 0	15 0
Second white wool	16 6	20 0	22 0
Best white wool	31 0	39 0	42 0
Second horse hair	24 0	29 0	31 0
Best horse hair, or best French ...	31 0	39 0	42 0

CHARGES FOR RE-MAKING MATTRESSES.

Size.	In Cleaned Case.*	In New Cotton Case.	In Sup. Cotton, Linen Stripe, or Brown Holland Case.	In Linen Tick, Best Check, Swansdown, or White Linen Case.
	s. d.	s. d.	s. d.	s. d.
Bassinet	3 6	—	—	4 6
2 ft. by 4 ft.	5 0	6 0	—	7 6
2 ft. 6 in. by 4 ft. 6 in.	5 6	7 0	—	8 6
2 ft. 6 in. by 5 ft. 6 in.	6 6	8 6	—	10 6
2 ft. 6 in. by 6 ft. ...	7 6	9 6	—	11 6
3 ft. by 6 ft.	7 6	10 6	12 0	13 6
3 ft. 6 in.	8 6	12 0	13 6	15 0
4 ft.	9 6	13 6	15 0	17 0
4 ft. 6 in.	10 6	14 6	16 6	19 0
5 ft.	11 6	16 6	18 0	21 0
5 ft. 6 in.	12 6	18 6	20 0	23 0
6 ft. by 7 ft.	15 0	22 0	24 0	27 0

For extra quantity in mattresses thicker than usual. 1d. per lb. carding.

Stoving or curing of moth 1s. per foot, or 1½d. per lb.

* If the case is not cleaned 1s. 6d. less up to 2 ft. 6 in. by 5 ft. 6 in.; above that size 2s. less.

CHARGES FOR CLEANING BED TICKS, &c.

	s.	d.		s.	d.
Cleaning and re-sewing plain bed ticks	4	6	Cleaning bolster ticks	1	0
Cleaning and re-binding bordered ditto	5	6	Ditto pillow ditto	0	3
Cleaning and re-welting welted ditto	8	0	Dressing feathers ... ... per lb.	0	3

PRICE OF BLANKETS.

Quality.	For Children's Cribs.				8-4	7-10
	4-4 ¾ yd. by 1¼.	5-4 1 yd. by 1½.	6-4 1¼ yds. by 1¾.	7-4 1½ yds. by 2.	1¾ yds. by 2¼.	1¾ yds. by 2½.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Common York ... ... per pair	—	—	—	5 10	7 0	—
Medium ditto ... ... ,,	—	—	—	6 8	8 6	—
Stout ditto ... ... ,,	—	—	—	—	10 0	11 6
Super. ditto ... ... ,,	—	—	—	—	—	14 6
Extra super. ditto ... ... ,,	—	—	—	—	13 6	—
Baths very fine and light ... ,,	4 0	6 0	8 0	10 6	14 0	—

	9-4 2 yds. by 2½.	10-4 2¼ yds. by 2¾.	11-4 2½ yds. by 3.	12-4 2¾ yds. by 3¼.	13-4 3 yds. by 3½.	14-4 3¼ yds. by 3¾.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Common York ... ... per pair	10 0	—	—	—	—	—
Medium ditto ... ... ,,	11 6	15 6	—	—	—	—
Stout ditto ... ... ,,	13 6	18 0	22 0	—	—	—
Super. ditto ... ... ,,	17 0	22 0	26 0	34 0	44 0	—
Extra super. ditto ... ... ,,	19 0	25 0	30 0	38 0	50 0	—
Extra super. Witney ... ,,	23 0	30 0	33 0	47 0	—	—
Ditto twilled very stout ... ,,	—	—	—	56 0	63 0	75 0
Baths very fine and light ... ,,	19 0	24 0	20 0	36 0	42 0	—

PRICE OF COUNTERPANES.

Quality.	9-4 1¾ yds. by 2¼.	10-4 2 yds. by 2½.	11-4 2¼ yds. by 2¾.	12-4 2½ yds. by 3.	13-4 2¾ yds. by 3¼.
	s. d.	s. d.	s. d.	s. d.	s. d.
Blue fast colours	3 9	4 9	5 9	7 0	—
Best blue ditto	5 6	6 6	7 6	9 6	—
Blue damask	4 0	5 0	6 0	7 6	—
Common white	3 9	4 9	6 0	—	—
Medium ditto	4 6	5 6	7 0	8 6	—
Fine ditto	5 6	7 0	8 6	10 6	—
Super. ditto	7 6	9 0	11 0	14 6	19 0
Super. super.	—	12 6	15 0	18 6	24 0

PRICE OF QUILTS.

Quality.	10-4 2¼ yds. by 2½.	11-4 2½ yds. by 2¾.	12-4 2¾ yds. by 3.	13-4 3 yds. by 3¼.	14-4 3¼ yds. by 3½.	15-4 3½ yds. by 3¾.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Marseilles	10 0	12 0	14 6	18 0	—	—
Super. ditto	12 0	15 0	18 0	21 0	28 0	—
Best ditto	—	—	—	26 0	32 0	40 0
Fine toilet quilt* ...	10 6	12 6	15 0	18 0	22 0	—
Royal ditto*	14 0	17 6	21 0	25 0	30 0	36 0
Super. super. ditto* ...	—	—	30 0	35 0	45 0	56 0

* These quilts are strongly recommended, being lighter and more durable than Marseilles.

PRICE OF QUILTS FOR CHILDREN'S CRIBS.

Quality.	4 by 5 or 1 yd. by 1¼.	5 by 7 or 1¼ yds. by 1¾.	5 by 8 or 1¼ yds. by 2.	7 by 9 or 1¾ yds. by 2¼.
	s. d.	s. d.	s. d.	s. d.
Fine toilet	2 6	4 6	5 6	9 0
Super. ditto	—	7 0	8 6	12 0

PRICE OF EIDER DOWN QUILTS.

PLAIN QUILTS.			BORDERED QUILTS.	
Quarters of a yard.	Cotton. £ s. d.	Silk. £ s. d.	Quarters of a yard.	£ s. d.
			6 by 8	3 0 0
4 by 5	1 0 0	1 12 0	7 ,, 8	3 10 0
4 ,, 6	1 3 0	1 17 0	8 ,, 8	4 0 0
4 ,, 7	1 7 0	2 3 0	8 ,, 10	4 10 0
5 ,, 5	1 4 0	1 18 0	9 ,, 9	4 15 0
5 ,, 6	1 9 0	2 6 0	9 ,, 10	5 5 0
5 ,, 7	1 13 0	2 13 0	10 ,, 10	5 14 0
5 ,, 8	1 17 0	3 0 0	11 ,, 12	7 7 0
6 ,, 8	2 4 0	3 12 0	12 ,, 12	7 16 0
7 ,, 8	2 12 0	4 4 0	13 ,, 13	9 5 0
8 ,, 8	3 0 0	4 16 0	14 ,, 14	10 15 0

PRICE OF DUVETS AND GOOSE DOWN QUILTS.

DUVETS.			GOOSE DOWN QUILTS.	
Quarters of a yard.	Cotton.	Silk.	Quarters of a yard.	£ s. d.
	£ s. d.	£ s. d.	4 by 5	0 8 6
			4 " 6	0 10 0
			5 " 6	0 12 6
5 by 5	1 18 0	2 10 0	5 " 7	0 14 0
5 " 6	2 6 0	3 0 0	5 " 8	0 16 0
5 " 7	2 13 0	3 10 0	6 " 8	0 18 0
5 " 8	3 0 0	4 2 0	7 " 8	1 1 0
6 " 8	3 12 0	4 16 0	8 " 8	1 4 0

RE-COVERING EIDER DOWN QUILTS.

	s. d.
Re-covering plain eider down quilts, in new cotton case, per sq. yard	5 0
Ditto ditto, in new silk case "	14 0
Ditto bordered ditto and duvets, per square yard	14 0

The bordered quilts are made with one side silk and the other soft twilled cotton; the centres of the upper sides are tufted with silk tufts, and the borders, lined with wadding, are quilted in diamonds. They are made in sizes suitable either to use as an extra covering or large enough to supersede the necessity for any other quilt, and are decidedly the warmest, the lightest, and the most elegant coverings that are made. The plain quilts are made entirely of either silk or cotton, and are similar to the centre of the bordered quilts, with the exception of the tufts; they are applicable wherever extra warmth is required, either as a wrapper in the carriage, or as an extra covering on the bed or couch. The duvets are loose cases filled with down, and are similar to those in general use on the Continent; they are mostly used to lay across the foot of the bed, but as they have a larger quantity of down in proportion to the size than the quilts, they are applicable wherever extreme warmth is required. The eider down used is of the finest quality; and as it combines the most warmth with the least weight of any known substance, together with its adhesive quality and freedom from stem or quill, its advantage over every other article as a lining for quilts is obvious, and their comfort, particularly to invalids, can not be too highly appreciated. They are made in any colour that is preferred, but those kept in stock are crimson, blue, green, and brown.

PRICE OF WHITE FUSTIAN PILLOW CASES.

	s. d.
20 by 20 inch	1 6
13-16 by 20, or 24 by 24	2 0
7-8 by 22, or 27 by 27	2 6
15-16 by 24, or 7-8 by 3-4	3 0

PRICE OF PLAIN BED TICKS.

Size.	Cotton for Flock. No. 5.	Fine Cotton. No. 55.	Super. Cotton. No. 4, Blue.	3-thread Linen.	Fine 3-thread Linen.
	s. d.	s. d.	s. d.	s. d.	s. d.
2 ft. 6 in.	—	4 6	5 0	8 0	10 0
3 ft.	3 9	5 9	6 0	9 6	11 6
3 ft. 6 in.	4 6	6 0	7 0	10 6	12 6
4 ft.	5 0	6 9	8 0	12 6	15 0
4 ft. 6 in.	—	7 6	8 6	13 0	16 0
5 ft.	—	—	9 6	14 0	17 0
5 ft. 6 in.	—	—	—	15 6	19 0

PRICE OF BORDERED BED TICKS.

Size.	Super. Cotton. No. 4, Blue.		3-thread Linen.		Fine 3-thread Linen.		Fine 4-thread Linen.		Fine 4-thread Linen, welted.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
2 ft. 6 in.	6	6	9	6	11	6	—		—	
3 ft.	8	0	12	0	15	0	17	6	20	0
3 ft. 6 in.	9	6	13	6	16	6	19	6	22	6
4 ft.	10	0	15	0	18	6	22	0	25	0
4 ft. 6 in.	10	6	16	0	20	0	23	0	26	0
5 ft.	11	0	16	6	21	0	24	0	28	0
5 ft. 6 in.	13	6	18	6	24	0	28	0	32	0

PRICE OF BOLSTER TICKS.

Size.	Cotton for Flock. No. 5.		Fine Cotton. No. 55.		Super. Cotton. No. 4, Blue.		3-thread Linen.		Fine 3-thread Linen.		Fine 4-thread Linen.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
2 ft. 6 in. ...	0	10	1	3	1	5	2	2	2	6	3	0
3 ft. ...	1	2	1	6	1	9	2	6	3	0	3	6
3 ft. 6 in. ...	1	4	1	8	2	0	2	10	3	6	4	0
4 ft. ...	1	6	1	10	2	2	3	2	4	0	5	0
4 ft. 6 in. ...	—		2	0	2	3	3	6	4	3	5	6
5 ft. ...	—		2	2	2	4	3	9	4	6	5	9
5 ft. 6 in. ...	—		2	4	2	6	4	0	5	3	6	0

PRICE OF PILLOW TICKS.

Size.	Cotton for Flock. No. 5.		Fine Cotton. No. 55.		Super. Cotton. No. 4, Blue.		3-thread Linen.		Fine 3-thread Linen.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
3-4	0	8	0	10	1	0	1	5	1	9
13-16	—		0	11	1	0	1	6	1	10
7-8 by 20	—		—		1	2	1	9	2	2

CHAP. II.

FURNITURE, AND ITS SELECTION.

SECT. 1.—DETAILS AND PRICES.

805. The various articles of furniture, as introduced into use in Great Britain, are too well known to need particular description; and the only difference consists in the alterations produced by fashion, which it is difficult to catch, as what is new this year is old the next. It is quite supererogatory to enter upon the well known fact, that chairs are meant for sitting upon, and tables for placing things upon; that beds are for sleeping upon at night, and sofas and couches for reclining on by day; and, therefore, all that will be here attempted will consist of a complete list of modern household furniture, with the medium prices annexed, and a list of the qualities and numbers of each article which will be wanted to furnish a house for persons with either of the four incomes already alluded to, which will be headed—No. 1, or that for an expenditure of £1000; No. 2, for £500; No. 3, for £250; and No. 4, for £100.

FURNITURE FOR HALL, STAIRCASE, AND LANDINGS.		No. 1.	No. 2.	No. 3.	No. 4.
HALL.		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Mahogany hall chairs, French-polished per pair	£ s. d. 1 15 0	...	...	...	...
Spanish mahogany ditto, stouter, French-polished ... ... per pair	2 0 0	...	...	...	...
Ditto, with cabriole legs, ditto ... ,,	2 5 0	...	...	...	...
Oak hall chairs, French-polished ,,	1 15 0	...	1 15 0	...	...
Ditto ditto, stouter ... ... ,,	2 0 0	...	...	...	...
Ditto ditto, with carved cabriole legs ,,	2 5 0	2 5 0	...	...	...
HAT AND UMBRELLA STANDS.					
Mahogany ditto, with loose pan	1 10 0	...	1 10 0	...	...
Oak ditto	1 10 0	...	...	...	...
Mahogany ditto	1 15 0	...	...	...	...
Oak ditto	1 15 0	...	...	...	...
Very handsome mahogany ditto, with large branches	3 10 0	3 10 0	...	...	...
FLOOR CLOTHS.					
Bordered, from 1s. 2d.		1 10 0	1 0 0	0 18 0	0 12 0
Cut to plan and fitted, from 2s. 3d. per square yard		...	...	...	...
DOOR MATS.					
Best door mat, 4 ft. 6 in. by 3 ft.		2 0 0	...	...	...
Second size ditto		...	1 10 0	...	...
Inferior quality		...	...	0 8 0	...
Ditto ditto, small size		...	...	...	0 4 0
STAIR CARPET, &c.					
Stout Brussels stair carpet, 30 inches wide, planned to landing ... ... per yard	0 4 9	16 0 0	...	...	...
Ditto ditto, 26 inches wide ... ,,	0 3 0	...	10 0 0	...	...
Ditto ditto, narrow width ... ,,	0 2 4	...	...	4 0 0	...
FURNITURE FOR KITCHEN AND OFFICES.					
KITCHEN FURNITURE AND SERVANTS' GENERAL ARTICLES.					
Deal table ... ... at	0 7 6	...	...	0 7 6	0 7 6
Single flap ditto ... ... ,,	0 17 0	...	0 17 0	...	...
Ditto large side ... ... ,,	0 18 6	...	...	...	...
Double flap ditto ... ... ,,	1 1 6	1 1 6	...	...	...
Ditto large side ... ... ,,	1 2 6	...	...	...	...
Round deal tables, stout tops, each ,,	0 7 0	...	...	...	...
Mahogany pillar and claw tea table ,,	0 16 6	...	...	...	...
Windsor chairs, each ... ... 8s. to	0 4 0	1 4 0	0 16 0	0 12 0	0 6 0
Windsor arm chairs, each from	0 5 0	...	...	...	...
Carried forward		27 10 6	17 8 0	6 5 6	1 9 6

KITCHEN SETS OF TIN, IRON, AND COPPER UTENSILS, WITH BRUSHES AND TURNERY.	No. 1. £	s.	d.	No. 2. £	s.	d.	No. 3. £	s.	d.	No. 4. £	s.	d.
Brought forward	27	10	6	17	8	0	6	5	6	1	9	6
Kitchen fender and fire irons	2	0	0	1	10	0	0	15	0	0	10	0
Copper Bain-marie pan, complete	6	6	0		...			...			...	
Wrought-iron dripping-pan and stand	1	13	0		...			...			...	
Basting-ladle	0	2	0		...			...			...	
Wood meat screen, lined with tin, and complete with hot closet	4	10	0		...			...			...	
Brass bottle-jack		...		0	11	6	0	6	6	0	6	6
Dripping-pan and stand		...		0	9	0	0	9	0		...	
Basting-ladle	0	1	4	0	1	4	0	1	2	0	0	7
Wood meat-screen		...		2	18	0	0	18	0		...	
Coffee-pot	0	4	6	0	1	6	0	1	6	0	1	6
Coffee-mill	0	8	0	0	2	9	0	2	9		...	
Colander	0	4	0	0	1	4	0	0	10	0	0	10
Candle-box, japanned	0	1	4	0	0	10	0	0	10	0	0	10
Meat-chopper	0	2	0	0	1	9	0	1	6	0	1	6
Meat-saw	0	4	0	0	3	6		...			...	
Cinder-shovel	0	1	9	0	1	4	0	0	10		...	
Coal ditto	0	2	3	0	2	0	0	1	9	0	1	9
Coal-scoop	0	6	6	0	2	4	0	2	0	0	2	0
Dustpan	0	1	3	0	1	0	0	0	6	0	0	6
Flat-irons	0	4	7	0	3	4	0	1	9	0	1	9
Italian-irons	0	1	9	0	0	9	0	0	9	0	0	9
Flat-iron stands	0	2	0	0	0	6	0	0	4	0	0	6
Flour-dredger	0	1	0	0	0	8	0	0	8	0	0	8
Sugar ditto	0	1	2		...			...			...	
Pepper-box	0	0	6	0	0	6	0	0	6	0	0	6
Mustard-pot	0	1	6	0	1	2		...			...	
Salt-cellars	0	1	6	0	0	9	0	0	9		...	
Frying-pans	0	3	11	0	2	9	0	1	2	0	1	2
Copper omelette-pan	0	5	6		...			...			...	
Ditto cutlet-pan	0	11	6		...			...			...	
Tin fish-kettle	0	8	6	0	7	0	0	4	0	0	4	0
Mackarel-saucepan	0	4	3		...			...			...	
Turbot-kettle	1	0	0		...			...			...	
Tin funnels	0	0	9	0	0	9	0	0	9		...	
Fluted-bar gridiron	0	3	6	0	1	8	0	1	2	0	1	2
Double-hanging ditto	0	1	9		...			...			...	
Iron spoons	0	1	0	0	0	9	0	0	4	0	0	4
Metal table-spoons	0	1	6		...			...			...	
Teaspoons	0	1	6	0	1	1	0	0	10	0	0	10
Knives and forks	0	6	0	0	5	6	0	2	8	0	2	3
Table-steel	0	1	0		...			...			...	
Pair of carvers	0	3	0		...			...			...	
Pestle and mortar	0	8	0	0	5	6	0	3	3		...	
Plate-basket	0	7	0	0	7	6	0	5	6		...	
Silver plate ditto	0	4	8	0	4	8		...			...	
Double knife-tray	0	4	6	0	4	6		...			...	
Gravy-strainers	0	2	10	0	1	4		...			...	
Bread-grater	0	1	0	0	0	9	0	0	6	0	0	6
Wrought-iron saucepans	0	14	9	0	7	4	0	4	5	0	4	5
Ditto stewpans	2	8	9	0	4	7	0	2	8	0	2	8
Ditto stock-pot	1	1	0		...			...			...	
Soup digester	0	10	0	0	6	3	0	6	3	0	6	3
Oval boiling-pot	1	0	6	0	12	0	0	4	6	0	4	6
Saucepan and steamer, tin	0	7	0	0	4	0		...			...	
Wrought-iron tea-kettle	0	11	6	0	4	3	0	2	9	0	2	9
Block-tin ditto	0	5	0		...			...			...	
Copper preserving-pan	0	15	6	0	6	6		...			...	
Sets of skewers	0	2	0	0	0	10	0	0	4	0	0	4
Fish-slice	0	1	2	0	1	0	0	0	4	0	0	4
Egg-slice and ladle	0	1	1	0	1	1		...			...	
Tin candlesticks	0	4	0	0	2	8	0	2	0	0	2	0
Block-tin saucepans	0	6	0	0	3	6		...			...	
Teapot (kitchen)	0	3	0	0	2	4	0	2	0	0	2	0
Toasting fork	0	0	8	0	0	8	0	0	6	0	0	6
Tea-trays for kitchen use	0	7	0	0	4	0	0	3	0	0	2	6
Carried forward	58	12	7	29	7	8	12	0	6	4	17	9

No. 4.		
£	s.	d.
4	17	9
0	2	3
0	4	6
0	1	0
0	2	0
0	1	0
0	1	9
0	1	6
0	1	6
0	1	0
0	3	0
0	1	0
0	3	0
0	1	6
0	1	0
0	1	0
0	4	0
0	2	0
0	1	0
0	2	0
0	6	0
0	1	6
0	6	0
0	3	0
0	1	0
7	11	3

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		101 9 7	48 9 0	18 12 1	7 11 3
Wine-coolers		5 0 0	...	...	...
Glass corner dishes		3 0 0	1 10 0	...	...
Trifle dish and stand		3 0 0	1 10 0	...	...
Pickle jars		0 12 0	0 10 0	...	...
Decanters		10 10 0	6 0 0	1 0 0	...
Sugar basin		0 10 0	0 6 0	0 3 0	0 1 0
Breakfast-service, china		10 10 0	3 3 0	...	...
Ditto ditto in Staffordshire ware		...	...	0 15 0	0 6 0
Dinner-service, china		30 0 0	...	...	...
Ditto ditto, ironstone		...	15 0 0	...	...
Ditto ditto, Staffordshire ware		...	..	3 0 0	1 10 0
Dessert-service, china		12 12 0	3 3 0	...	...
Ditto, Staffordshire ware		...	...	1 0 0	...
PLATE AND PLATED GOODS AND CUTLERY.					
Set of silver plate, complete, Queen's pattern:—		...	...	...	...
12 Tablespoons, 40 oz., at 7s. 6d. ...	£15 0 0	...	...	...	...
12 Dessert ditto, 25 oz., at 7s. 6d. ...	9 7 6	...	...	...	...
24 Table forks, 80 oz., at 7s. 6d. ...	30 0 0	...	...	...	...
24 Dessert ditto, 50 oz., at 7s. 6d. ...	9 7 6	...	...	...	...
2 Gravy spoons, 12 oz., at 7s. 6d. ...	4 10 0	...	...	...	...
1 Soup ladle, 11 oz., at 7s. 6d.	4 2 6	...	...	...	...
4 Sauce ditto, 12 oz., at 8s.	4 16 0	...	...	...	...
8 Salt-spoons, gilt	4 5 0	...	...	...	...
24 Teaspoons, 28 oz., at 8s.	11 4 0	...	...	...	...
1 Pair sugar-tongs	1 5 0	...	...	...	...
Tea and coffee service	50 0 0	...	...	...	...
3 Waiters	60 0 0	...	...	...	...
Cruet-stand	15 0 0	...	...	...	...
Butter-knife	1 1 0	...	...	...	...
		219 18 6	...	...	...
Silver tablespoons, dessert ditto, and teaspoons ...		...	25 0 0	...	...
Plated dish-covers		20 0 0	8 16 6	...	...
Case of plated dessert knives and forks		6 6 0	5 5 0	...	...
Electro-plated spoons		...	...	4 4 0	1 0 0
Electro-plated forks		...	4 14 6	4 4 0	...
Ditto sauce and soup ladles and sugar-tongs ...		...	4 0 0	2 10 0	...
Plated tea and coffee-pots, cream-jug, and sugar-basin		...	8 8 0	4 4 0	2 0 0
Ditto chamber-candlesticks		5 0 0	4 0 0	2 0 0	0 5 0
Plated cruet-frame		...	4 0 0	2 0 0	...
Butter and fish knife		6 6 0	2 0 0	1 0 0	...
Table candlesticks or lamp		8 8 0	3 0 0	1 5 0	...
Toast-rack		...	0 18 0	...	...
Cutlery		15 15 0	8 8 0	3 10 0	1 0 0
Papier machée trays		8 8 0	3 10 0	...	...
Iron trays, japanned		...	...	1 0 0	0 10 0
LINEN.					
Sheets		16 0 0	8 0 0	3 0 0	1 10 0
Pillow cases		4 0 0	2 0 0	0 10 0	0 8 0
Toilet covers		1 10 0	0 18 0	...	...
Towels		4 4 0	2 10 0	2 0 0	1 0 0
Table-cloths		12 12 0	6 6 0	3 0 0	1 0 0
Breakfast cloths		4 4 0	2 2 0	...	...
Tray cloths		1 10 0	0 15 0	0 10 0	...
Dinner napkins		6 6 0	2 2 0	...	...
Kitchen cloths		3 0 0	2 0 0	1 10 0	1 0 0
Housemaid's ditto		1 0 0	0 10 0	...	...
HOUSEMAID'S CLOSET UTENSILS.					
Sponging bath		3 0 0	1 10 0	1 10 0	...
Toilet pails		0 12 0	0 5 6	0 5 6	...
Ditto cans		0 15 0	...	...	...
Carried forward		525 18 1	190 9 6	62 12 7	19 1 3

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		525 18 1	190 9 6	62 12 7	19 1 3
Improved commode pail		1 0 0	...	...	...
Japanned foot bath		1 10 0	...	...	...
Ditto smaller		...	0 10 0	0 4 6	0 4 6
DINING-ROOM FURNITURE.					
SIDEBOARDS.					
Mahogany enclosed sideboard, 4 ft. 6 in. long, carved back, fitted with cellaret, drawer, and French-polished	4 10 0	...	...	...	...
Ditto ditto, 5 ft. long	5 0 0	...	...	...	...
Spanish mahogany enclosed sideboard, 4 ft. 6 in. long, with richly carved back and moulded panels, fitted with cellaret, drawers, and trays, French-polished ...	5 0 0	...	...	...	...
Ditto ditto, 5 ft. long	5 10 0	...	...	5 10 0	...
Ditto ditto, 5 ft. 6 in. long	6 6 0	...	...	...	...
Spanish mahogany enclosed sideboard, 6 ft. long, with richly carved back, moulded panels, and carved trusses, fitted with cellaret, drawers, and trays	9 0 0	...	...	...	...
Spanish mahogany enclosed sideboard, 6 ft. 6 in. long, with raised panel doors, serpentine front, and richly carved back, fitted with cellaret, plate drawers, and sliding trays, French-polished ...	10 10 0	...	...	...	...
Mahogany pedestal sideboard, 6 ft. long, with moulded panels, and fitted with cellaret, drawer, French-polished ...	9 0 0	...	...	...	...
Spanish mahogany ditto, richly carved back and panels, with serpentine front, 6 ft. long	12 0 0	...	12 0 0	...	...
Ditto ditto, 7 ft. long, fitted with plate drawer, &c.	18 0 0	18 0 0	...	...	...
DINING-TABLES.					
Mahogany sliding dining-table, with one additional leaf, 3 ft. 6 in. wide ...	4 5 0	...	...	...	4 5 0
Ditto, with two additional leaves, 4 ft. wide	5 10 0	...	...	...	...
Ditto ditto	6 6 0	...	...	6 6 0	...
Mahogany telescope dining-table, two additional leaves	7 0 0	...	...	...	...
Ditto ditto, fine wood	8 0 0	...	...	...	...
Spanish mahogany telescope dining-table, 4 ft. wide, with octagon legs and block edges, two additional leaves	8 0 0	...	...	...	...
Ditto ditto, 4 ft. 3 in. wide	9 0 0	...	...	...	...
Ditto ditto, 4 ft. 6 in. wide, with three additional leaves	10 0 0	...	10 0 0	...	...
Spanish mahogany telescope dining-table, block edges, 4 feet wide, two additional leaves, and fitted with the patent screw movement	12 0 0	...	...	...	...
Ditto ditto, 4 ft. 3 in. wide	14 0 0	...	...	...	...
Ditto ditto, 4 ft. 3 in. wide, with three additional leaves	17 10 0	...	...	...	...
Ditto ditto, 4 ft. 6 in. wide, with three additional leaves	18 0 0	18 0 0	...	...	...
DINNER WAGGONS.					
3 ft. 6 in. mahogany dinner waggon, with three shelves, on castors, and French-polished	3 0 0	3 0 0	...	...	...
Carried forward		567 8 1	212 19 6	74 13 1	23 10 9

[illegible]

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		623 18 1	238 15 6	87 3 1	27 5 9
4-4 Dutch hemp, at 1s. 2d.		...	...	...	0 10 6
Turkey rug		3 0 0	...	...	..
Extra rich rug		...	2 0 0	...	...
Small size		...	...	1 0 0	...
FENDERS AND FIRE-IRONS.					
Berlin black fender, with steel mouldings ...		2 10 0	...	...	...
Ditto ditto, smaller size		...	1 10 0	...	...
Black fender, with standards		...	...	0 12 0	...
Ditto ditto, without ditto		...	...	...	0 6 0
Set of large very highly polished steel, and cut-heads		3 0 0	...	...	...
Smaller size ditto		...	0 16 0	...	...
Ditto small		...	...	0 5 6	...
Ditto ditto		...	...	...	0 2 9
For Roller Blinds, see page 122.					
CORNICES AND CURTAINS.					
Handsome Spanish mahogany or oak cornice or pole, complete, with cloth or rich damask curtains, and deep bullion fringe, at per window	£12 0 0	24 0 0	...	...	...
Ditto ditto less bold, and with inferior damask, at per window	£8 0 0	...	16 0 0	...	...
Birch pole and rings, and morocco curtains, at per window	£2 10 0	...	...	5 0 0	...
LIBRARY OR STUDY.					
COUCHES AND SETTEES.	£ s. d.				
Mahogany couch, finished in damask	2 5 0	...	...	...	...
Mahogany couch, on brass castors, finished in hair seating and French-polished	3 3 0	...	...	...	...
Ditto ditto	4 0 0	...	...	...	...
Ditto ditto, stuffed all hair	4 10 0	...	4 10 0	...	...
Bold mahogany couch, with spring or loose cushion and bolster, finished in hair seating, and French-polished ...	5 10 0	...	...	...	...
Best Spanish mahogany ditto, stuffed in best manner, and covered in satin hair-cloth	6 15 0	6 15 0	...	...	...
BOOKCASES.					
Mahogany cheffonier bookcase, with glazed doors, French-polished ...	6 10 0	...	...	...	...
Ditto ditto with secretaire drawer ...	7 10 0	...	...	...	...
Spanish mahogany ditto	9 0 0	...	18 0 0	...	...
Ditto larger size	12 10 0	...	...	...	...
Spanish mahogany bookcase, with glazed doors, secretaire, and cupboard, fitted with shelves	15 0 0	30 0 0	...	...	...
WRITING-TABLES.					
Mahogany writing-table, with two drawers, and top covered in leather, 3 ft. 6 in. long	3 5 0	...	...	...	...
Ditto, 4 ft. long, with 4 drawers ...	4 10 0	...	4 10 0	...	...
Ditto 5 ft. long	5 10 0	...	...	...	...
Pedestal writing-table, fitted with drawers and book cupboard, top covered in leather	8 0 0	...	...	...	...
Carried forward		693 3 1	286 1 6	94 0 7	28 5 0

	£ s. d.	No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		693 3 1	286 1 6	94 0 7	28 5 0
Pedestal writing-table, with drawers and cupboards on each side	10 10 0	...	...	...	...
Ditto ditto larger	12 12 0	12 12 0	...	...	...
Carpet, curtains, fender, and fire-irons		25 0 0	14 0 0	...	...
DRAWING-ROOM FURNITURE.					
MAHOGANY SOFAS.					
Plain mahogany sofa, finished in figured canvas	2 15 0	...	...	2 15 0	...
Ditto finished in hair seating	3 10 0	...	...	...	...
Spanish mahogany sofa, with carved scrolls and neat back, on strong castors, covered in hair seating ...	4 10 0	...	...	...	...
Ditto ditto stuffed all hair, loose squab and bolster, finished in hair seating	5 0 0	...	...	...	...
Ditto ditto with carved scroll continuation back, with spring seat, stuffed all best hair, and covered in satin-hair cloth	8 0 0	...	...	...	...
ROSEWOOD AND WALNUT COUCHES.					
Plain rosewood couch, in figured canvas	3 5 0	...	...	...	...
Ditto ditto stuffed all hair	4 10 0	...	...	...	...
Rosewood or walnut cabriole couch, with spring seat, finished in canvas	5 0 0	...	...	...	...
Ditto ditto richly carved, stuffed all hair, spring seat, and finished in best manner	5 15 0	...	...	...	...
Ditto ditto with rosewood or walnut mouldings round the back	6 15 0	...	...	...	...
Rosewood or walnut cabriole, double ended settee, with spring seat, finished in canvas	7 0 0	...	7 0 0	...	...
Ditto ditto larger size	7 15 0	...	...	...	...
Ditto ditto with mouldings round the arms and back, spring seat, and all hair-stuffed	8 15 0	...	...	...	...
Ditto ditto richly carved	9 9 0	18 18 0	...	...	...
Iron-backed couches and settees, covered in coburg ... £3 3s. to	8 8 0	...	...	...	...
ROSEWOOD AND WALNUT EASY CHAIRS.					
Rosewood easy chair, in canvas ...	1 13 0	...	...	1 13 0	...
Ditto ditto all hair stuffed	2 15 0	...	...	...	...
Lady's shell-back easy chair	3 15 0	...	...	...	...
Ditto ditto with arms	3 3 0	...	...	...	...
Rosewood or Sutherland easy chair, stuffed all hair in the best manner	3 10 0	...	7 0 0	...	...
Ditto ditto richly carved	4 4 0	8 8 0	...	...	...
German easy chairs, with iron backs, covered in coburg cloth	1 16 0	...	...	...	...
Ditto hair-stuffed ditto	2 15 0	...	...	...	...
CHAIRS.					
Birch drawing-room chair, stained rosewood, covered either in moreen, chintz, or damask ... each	0 12 6	...	...	4 16 0	...
Rosewood or walnut balloon-back chairs, in printed canvas ... each	0 16 6	...	8 0 0	...	...
Carried forward		758 1 1	322 1 6	103 4 7	28 5 0

	£	s.	d.	No. 1.	No. 2.	No. 3.	No. 4.
				£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward				758 1 1	322 1 6	106 4 7	28 5 0
Rosewood or walnut balloon-back chairs, with carved splat and shaped seat, in printed canvas ...	1	0	0	...	...	...	...
Rosewood or walnut shield-back chair with shaped seat, cabriole legs, and all hair-stuffed	1	2	6	...	...	...	...
Ditto ditto	1	6	0	...	...	...	...
Rosewood or walnut chair, with carved shield-back and splat, cabriole legs, stuffed all best hair, and finished in the best manner	1	8	0	...	...	...	...
Rosewood or walnut bold shield-back chair, with shaped seat, cabriole legs, stuffed all hair, and finished in the best manner	1	10	0	...	...	...	...
Rosewood or walnut chair, with richly-carved banister back	1	12	0	16 0 0	...	...	...
Rosewood or walnut chair, with stuffed panel back	1	15	0	...	...	...	...
MUSIC STOOLS.							
Rosewood, walnut, or mahogany, on triangular block, French-polished ...	0	15	0	...	...	...	...
Ditto ditto	1	1	0	...	...	...	...
Ditto on solid circular block, and paw feet	1	6	0	...	...	...	...
Ditto ditto	1	10	0	...	1 10 0	...	...
Ditto on cabriole legs	1	15	0	...	...	...	...
Ditto on carved ditto, with patent iron screw movement	2	2	0	2 2 0	...	...	...
LOO-TABLES.							
Plain mahogany solid-top loo-table, 3 ft. 6 in. diameter, with moulded edge, French-polished	1	15	0	...	...	...	...
Ditto ditto, 3 ft. 9 in. diameter ...	2	10	0	...	...	...	...
Ditto ditto, 4 ft. diameter	2	13	0	...	...	...	...
Mahogany solid-top loo-table, with stout mahogany rim, 4 ft. diameter	3	0	0	...	...	...	...
Mahogany veneered-top loo-table, on triangular block and truss feet, 4 ft. diameter, French-polished	3	15	0	...	...	3 15 0	...
Ditto ditto very fine wood	4	0	0	...	...	...	...
Star-top mahogany loo-table, 4 ft. diameter	4	10	0	...	...	...	...
Ditto ditto on circular block, very rich wood	5	0	0	...	...	...	...
Ditto ditto on carved cabriole legs ...	5	10	0	...	...	...	...
Mahogany oval loo-tables, on cabriole legs, solid top ... from 70s. to	5	15	0	...	...	...	...
Rosewood loo-table, 3 ft. 9 in. dia., French polished	4	0	0	...	...	...	...
Ditto ditto, 4 ft. diameter	4	10	0	...	...	...	...
Ditto ditto on circular block	5	0	0	...	...	...	...
Rosewood loo-table, on carved cabriole legs, 4 ft. diameter	5	10	0	...	...	...	...
Walnut ditto ditto	6	0	0	...	...	...	...
Rosewood ditto on richly carved cabriole legs, very fine wood... ...	6	10	0	...	...	...	...
Walnut ditto ditto	8	0	0	...	8 0 0	...	...
Rosewood oval loo-tables on cabriole legs, very fine wood, from 80s. to	9	0	0	...	...	...	...
Walnut ditto ditto ... from 126s. to	10	0	0	...	...	...	...
Carried forward				776 3 1	331 11 6	106 19 7	28 5 0

		No. 1.	No. 2.	No. 3.	No. 4.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		776 3 1	331 11 6	106 19 7	28 5 0
Rosewood shaped oval loo-table, on massive carved cabriole legs, very rich wood	11 0 0	...	...	...	...
Walnut ditto ditto	12 0 0	12 0 0	...	...	...
CHEFFONIERS.					
3 ft. mahogany cheffoniers, with drawers, French-polished	2 2 0	...	...	2 2 0	...
3 ft. 6 in. ditto ditto	2 12 0	...	...	...	...
Ditto with carved back and brackets...	2 18 0	...	...	...	...
3 ft. 9 in. ditto ditto	3 3 0	...	...	...	...
3 ft. 6 in. mahogany serpentine front ditto, with bold back	3 15 0	...	...	...	...
3 ft. 9 in. ditto ditto	4 5 0	...	...	...	...
4 ft. ditto ditto	4 10 0	...	...	...	...
3 ft. 6 in. ditto, with secretaire drawer, very fine wood	5 10 0	...	...	...	...
4 ft. ditto ditto	6 0 0	...	...	...	...
4 ft. mahogany cheffonier sideboard, with cellaret drawer	4 10 0	...	...	...	...
4 ft. ditto, with carved panel doors, carved back, and cellaret drawer ...	5 10 0	...	...	...	...
3 ft. 6 in. mahogany cheffonier, with veined-marble top and plate-glass back	6 6 0	...	...	...	...
4 ft. ditto, with twist columns, carved brackets, marble top, and plate-glass back	7 10 0	...	...	...	...
4 ft. ditto serpentine front, with marble top, and plate-glass back	8 0 0	...	...	...	...
3 ft. rosewood cheffonier, with fretwork back and shelf, on twisted pillars, French-polished	3 10 0	...	...	...	...
3 ft. ditto, with carved back and shelf on carved brackets, ditto	3 15 0	...	...	...	...
3 ft. 6 in. ditto ditto	4 0 0	...	...	...	...
3 ft. 6 in. walnut ditto ditto	4 0 0	...	...	...	...
3 ft. 6 in. rosewood ditto, with plate-glass back and covered silk panels...	7 0 0	...	7 0 0	...	...
3 ft. 6 in. rosewood cheffonier, with shelf and fret-work top, plate-glass back, and marble slab	7 0 0	...	...	...	...
4 ft. rosewood cheffonier, with carved back and shelf on brackets	5 0 0	...	...	...	...
4 ft. walnut ditto ditto	5 5 0	...	...	...	...
4 ft. rosewood or walnut ditto, serpentine front, carved panel doors, plate-glass back, and marble top ...	9 0 0	...	...	...	...
4 ft. 6 in. ditto ditto, serpentine front, carved corner trusses, plate-glass doors, high back, and marble top ...	13 0 0	...	...	...	...
4 ft. 6 in. rosewood or walnut ditto, with shaped ends, glass panel doors, high back, and marble slab	15 10 0	...	...	...	...
5 ft. 6 in. ditto ditto, with rich carvings round the panels	18 0 0	18 0 0	...	...	...
WORK-TABLES.					
Ladies' mahogany work-tables, with silk bag ... ... from 50s. to	4 0 0	...	3 0 0	...	...
Ladies' rosewood or walnut ditto, in great variety ... from 50s. to	4 10 0	4 10 0	...	...	...
Carried forward		810 13 1	341 11 6	109 1 7	28 5 0

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		810 13 1	341 11 6	109 1 7	28 5 0
FANCY TABLES.	£ s. d.				
Mahogany table, with twist pillars ...	0 17 6	...	...	...	...
Rosewood ditto	1 1 0	...	1 1 0	...	...
Mahogany ditto, with inlaid chess top	1 1 0	...	...	...	...
Ditto with shaped tops	1 6 0	...	...	...	...
Rosewood or walnut ditto, with marquetry inlaid top	1 12 0	3 4 0	...	...	...
PEMBROKE TABLES.					
3 ft. mahogany pembroke table, French-polished	1 8 6	...	...	...	...
3 ft. 6 in. ditto ditto	1 12 6	...	...	...	...
Ditto ditto	2 2 0	...	...	...	...
Ditto ditto	2 12 0	...	...	...	...
3 ft. 6 in. mahogany pembroke table, on pillar and block, French-polished	3 3 0	...	...	...	...
Ditto ditto	3 10 0	...	...	...	...
CARD-TABLES.					
Mahogany card-table, on turned legs, French-polished	1 10 0	...	...	...	...
Ditto ditto	1 15 0	...	...	...	...
Mahogany card-table, on pillar and block, French-polished	2 10 0	...	...	...	...
Ditto ditto, top lined with cloth ...	2 15 0	...	...	...	...
Rosewood card-table, on pillar and block, French-polished	3 3 0	...	6 6 0	...	...
Ditto ditto, top lined with cloth ..	3 7 0	...	...	...	...
Ditto ditto	4 4 0	...	...	...	...
Ditto, on cabriole legs, with moulding round top edge	5 5 0	10 10 0	...	...	...
CANTERBURYS.					
Rosewood or mahogany plain canterbury, with drawer	1 10 0	...	...	...	...
Carved ditto ditto	2 2 0	...	2 2 0	...	...
Ditto larger	2 10 0	...	...	...	...
Ditto on cabriole feet	3 5 0	3 5 0	...	...	...
FIRE-SCREENS.					
Handsome fire-screens		6 6 0	...	...	...
Plain ditto		...	2 2 0	...	...
CORNICE AND CURTAINS.					
Rich carved and gilt cornices to windows, with handsome silk damask curtains, bullion fringe, and silk droppers, complete, with patent noiseless poles, at £15 per window		45 0 0	...	...	...
Ditto ditto, smaller size, and worsted damask, at £8 per window		...	16 0 0	...	...
Birch stained poles and rods, damask or chintz curtains, at 50s. per window		...	...	5 0 0	...
CARPETS AND RUGS.					
Extra rich velvet-pile carpet, planned to room, containing, say 80 yards at 6s. 6d. per yard,		26 0 0	...	...	...
Axminster rug to match		3 3 0	...	...	...
Superior 3-thread Brussels carpet, ditto ditto, at 4s., containing 45 yards		...	19 0 0	...	...
Carried forward		908 1 1	388 2 6	114 1 7	28 5 0

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		908 1 1	388 2 6	114 1 7	28 5 0
Rug to match		...	1 10 0	...	...
4-4 extra sup. Kidderminster carpet, planned to room		...	...	2 10 0	...
Small worsted rug		...	...	0 18 0	...
FENDERS AND FIRE-IRONS.					
Handsome steel fenders and fire-irons ...		9 0 0	...	...	...
Ditto ditto, smaller, and bronzed		...	4 10 0	...	...
Ditto ditto, very plain		...	...	2 10 0	...
Handsome carved and gilt chimney glass ...		25 0 0	...	...	...
Ditto smaller size		...	12 0 0	...	...
Ditto small		...	...	3 0 0	...
Pier tables and glasses		15 0 0	...	...	...
Foot-stools		3 3 0	2 2 0	1 1 0	...
Ornaments for mantel-piece, cheffonier, &c.		25 0 0	5 0 0	1 10 0	...

Piano-forte, 25 to 120 guineas, not included.
For Roller Blinds, see page 122.

BEDSTEADS, BEDDING, AND BED FURNITURE.

(*From Heal & Son's Catalogue for* 1856, *to which the Numbers refer.*)

The following pages contain estimates for a bedstead, furniture, and bedding of each of the different varieties most in demand, from the cheapest servants' iron stump to the handsome mahogany half-tester and four-post bedsteads. It is also intended to show what description of bedding is considered suitable to be used together:—

No. 217.—A 3ft. Servants' Iron Stump Bedstead, with Feather Bed, &c., complete.

		No. 1.	No. 2.	No. 3.	No. 4.
3 ft. iron stump bedstead, screw joints, frame in one piece	£0 15 0	...	...	...	...
3 ft. bordered flock mattress	0 9 0	...	...	...	...
3 ft. poultry feather bed, bolster, and pillow	1 12 6	...	...	...	...
1 pair 9-4 blankets	0 11 6	...	...	...	...
1 7-4 blanket, at per pair 5s. 10d. ...	0 2 11	...	...	...	...
1 9-4 blue counterpane	0 3 9	...	...	...	...
	£3 14 8	3 14 8	...	3 14 8	3 14 8

No. 218.—A 4 ft. 6 in. Servants' Iron Stump Bedstead, with Mattress, &c., complete.

		No. 1.	No. 2.	No. 3.	No. 4.
4 ft. 6 in. iron stump bedstead, painted green, dove-tail joints, on castors ...	£1 6 0	...	...	...	...
A canvas bottom to lay on the laths...	0 3 0	...	...	...	...
4 ft. 6 in. best flock mattress	0 18 0	...	...	...	...
4 ft. 6 in. poultry feather bed, bolster, and pillow	2 13 0	...	...	...	...
1 pair 9-4 stout blankets	0 19 0	...	...	...	...
1 8-4 stout blanket, at per pair 8s. 6d....	0 4 3	...	...	...	...
1 10-4 blue counterpane	0 4 9	...	...	...	...
	£6 8 0	6 8 0	6 8 0	...	...
Carried forward		995 6 9	419 12 6	129 5 3	31 19 8

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		995 6 9	419 12 6	129 5 3	31 19 8
No. 290.—A 3 ft. Iron French Bedstead, japanned, with Feather Bed, &c., complete.					
3 ft. iron French bedstead, japanned cane	£1 8 0	...	...	...	...
A canvas bottom to lay on the laths	0 3 0	...	...	...	...
3 ft. best flock mattress, extra thick...	0 14 6	...	...	...	...
3 ft. gray goose bed, bolster, and pillow	2 0 0	...	...	...	...
1 pair 9-4 blankets	0 13 6	...	...	...	...
1 8-4 stout blanket, at per pair 8s. 6d.	0 4 3	...	...	...	...
1 10-4 white counterpane	0 5 6	...	...	...	...
	£5 8 9	...	...	...	...
226.—3 ft. Servants' Half-tester Iron Bedstead, with Furniture, Mattress, &c., complete.					
3 ft. half-tester iron bedstead, painted green	£1 7 0	...	...	...	...
A chintz furniture, lined throughout, with base valances, and canvas bottom, complete—chintz at 5d. per yard, lining at 4d. per yard	1 8 0	...	...	...	...
3 ft. best flock mattress, extra thick...	0 14 6	...	...	...	...
3 ft. coloured wool mattress, extra thick	1 0 0	...	...	...	...
3 ft. foreign gray goose bolster and pillow	0 14 6	...	...	...	...
1 pair 9-4 stout blankets	0 13 6	...	...	...	...
1 8-4 stout blanket, at per pair 8s. 6d....	0 4 3	...	...	...	...
1 10-4 white counterpane	0 5 6	...	...	...	...
	£6 7 3	...	...	...	...
No. 287.—3 ft. Half-tester Iron Bedstead, with Furniture, Feather Bed, &c., complete.					
3 ft. half-tester iron bedstead, with foot-rail, japanned blue or maple ...	£2 2 0	...	...	...	...
A chintz furniture, lined throughout, bound with silk binding, a fringed valance, canvas bottom and base valances, two breadths in each curtain—chintz at 7d. per yard, and lining at 5½d.	2 14 0	...	...	...	...
A furniture of damask at 1s. per yard for the same price.					
3 ft. coloured wool mattress, extra thick	1 0 0	...	...	...	...
3 ft. foreign gray goose bed, bolster, and pillow...	2 16 0	...	...	...	...
1 pair 9-4 super blankets	0 17 0	...	...	...	...
1 8-4 super. blanket, at 10s. per pair ...	0 5 0	...	...	...	...
1 10-4 white counterpane	0 9 0	...	...	...	...
	£10 3 0	...	...	...	...
No. 288.—A 4 ft. 6 in. Half-tester Iron Bedstead, with Furniture and Mattress complete.					
4 ft. 6 in. half-tester iron bedstead, japanned blue or maple, brass vases	£2 11 0	...	...	...	...
A chintz furniture, lined throughout and bound with silk binding, shaped					
Carried forward		995 6 9	419 12 6	129 5 3	31 19 8

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		995 6 9	419 12 6	129 5 3	31 19 3
Brought forward	£2 11 0				
pelmet valance, with fine fringe and tassels, base valances and canvas bottom, two breadths each curtain — chintz at 8d. per yard, lining at 5½d. per yard...	4 0 0	...	...	...	...
4 ft. 6 in. best flock mattress, extra thick	1 1 0	...	...	...	...
4 ft. 6 in. coloured wool mattress ...	1 4 0	...	...	...	...
4 ft. 6 in. second horse hair mattress	2 14 0	...	...	...	...
4 ft. 6 in. Foreign gray goose bolster and two pillows	1 4 6	...	...	...	...
1 pair 11-4 blankets	1 6 0	...	...	...	...
1 9-4 blanket, at 13s. 6d. per pair ...	0 6 9	...	...	...	...
1 12-4 toilet quilt	0 15 0	...	...	...	...
	£15 2 3	...	30 4 6	30 4 6	15 2 3
No. 227.—A 5 ft. Superior Canopy Iron Bedstead, with Furniture, Feather Bed, &c., complete.					
5 ft. canopy French bedstead of iron tubing, japanned maple, brass vases and castors	£4 10 0	...	...	...	...
A chintz furniture, lined throughout and bound with silk binding, fringe and worsted rope round the top, base valances, and canvas bottom—chintz at 8d. per yard, and lining at 5½d. per yard	5 5 0	...	...	...	...
A furniture of damask at 1s. 2d. per yard for the same price.					
5 ft. best flock mattress, extra thick...	1 4 0	...	...	...	...
5 ft. second hair mattress	3 3 0	...	...	...	...
5 ft. best gray goose bed, bolster, and two gray down pillows	7 7 0	...	...	...	...
1 pair 12-4 blankets	1 14 0	...	...	...	...
1 10-4 blanket, at per pair 18s.	0 9 0	...	...	...	...
1 13-4 toilet quilt	0 18 0	...	...	...	...
	£24 10 0	...	...	...	...
No. 232.—5 ft. Half-tester Iron Bedstead, with Dimity Furniture and French Bedding complete.					
5 ft. half-tester bedstead of iron tubing, japanned maple, brass vases and castors	£4 10 0	...	...	...	...
A dimity furniture, with fringed valance, and worsted rope along the top of tester, 5 breadths in each curtain—dimity at 9d. per yard	2 16 0	...	...	...	...
5 ft. best flock mattress, extra thick...	1 4 0	...	...	...	...
5 ft. coloured wool mattress	1 8 0	...	...	...	...
5 ft. best French mattress	4 6 0	...	...	...	...
5 ft. best gray goose bolster and two gray down pillows	1 19 6	...	...	...	...
1 pair 12-4 super. blankets	1 14 0	...	...	...	...
1 10-4 super. blanket, at per pair 18s....	0 9 0	...	...	...	...
1 13-4 toilet quilt	0 18 0	...	...	...	...
	£19 4 6	19 4 6	19 4 6	19 4 6	...
Carried forward		1014 11 3	469 1 6	178 14 3	47 1 11

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		1014 11 3	469 1 6	178 14 3	47 1 11
No. 275.—A 3 ft. 6 in. Superior French Iron Bedstead, with Best Spring Bedding complete.					
3 ft. 6 in. superior French bedstead, of iron tubing, japanned maple, brass vases and castors	£4 0 0	...	...	...	...
3 ft. 6 in. best German spring mattress	4 18 0	...	...	...	...
3 ft. 6 in. thin best wool mattress ...	2 7 0	...	...	...	...
3 ft. 6 in. best white goose bolster and 7-8 white down pillow	1 14 0	...	...	...	...
1 pair 10-4 Witney blankets	1 10 0	...	...	...	...
1 8-4 Witney blanket, at 13s. 6d. per pair	0 6 9	...	...	...	...
1 11-4 royal quilt	0 17 6	...	...	...	...
	£15 13 3	...	...	...	...
The above set of bedding makes the softest and most luxurious bed that can be had.					
No. 240.—A 5 ft. Superior Four-post Iron Bedstead, with Furniture and Best French Bedding complete.					
5 ft. superior four-post bedstead of 2¼ in. tubing, japanned maple, brass vases and castors	£6 10 0	...	...	...	...
A chintz furniture, lined throughout and bound with silk binding, plaited valance and rope at the top of tester, base valances, and canvas bottom, 2 head curtains 3 breadths, and 4 curtains of 2 breadths each—chintz at 10d. per yard, and lining at 5½d. per yard	7 15 0	...	...	...	...
A furniture of damask at 1s. 4d. per yard for the same price.					
5 ft. best flock mattress, extra thick	1 4 0	...	...	...	...
5 ft. best hair mattress	4 6 0	...	...	...	...
5 ft. best French mattress, extra thick	5 2 0	...	...	...	...
5 ft. best white goose bolster and 2 white down pillows	2 17 0	...	...	...	...
1 pair 12-4 super. blankets	1 18 0	...	...	...	...
1 10-4 super. blanket, at per pair 22s....	0 11 0	...	...	...	...
1 13-4 royal quilt	1 5 0	...	...	...	...
	£31 8 0	...	...	...	...
No. 93.—A 5 ft. Half-Tester Wood Bedstead, japanned, with Furniture and Feather Bed, &c., complete.					
5 ft. half-tester bedstead, japanned maple, with rods and rings complete	£2 18 0	...	...	...	...
Chintz furniture, lined throughout and bound with silk binding, base valances, but no valance to tester, two breadths in each curtain—chintz at 7d. per yard, and lining at 5½d. per yard	1 16 0	...	...	...	...
A furniture of damask at 1s. per yard for the same price.					
5 ft. palliasse	0 14 0	...	...	...	...
5 ft. coloured wool mattress	1 8 0	...	...	...	...
Carried forward	6 16 0				
Carried forward		1014 11 3	469 1 6	178 14 3	47 1 11

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		1014 11 3	469 1 6	178 14 3	47 1 11
Brought forward	£6 16 0				
5 ft. foreign gray goose bed, bolster, and two pillows	5 19 0	...	...	...	...
1 pair 12-4 super. blankets	1 14 0	...	...	...	...
1 10-4 blanket, at 18s. per pair	0 9 0	...	...	...	...
1 13-4 toilet quilt	0 18 0	...	...	...	...
	£15 16 0	...	15 16 0	...	15 16 0
No. 100.—A 5 ft. Mahogany Half-tester Bedstead, with Furniture and French Bedding complete.					
5 ft. mahogany half-tester bedstead, French-polished, rods and rings complete	£5 15 0	...	...	...	...
Chintz furniture, lined throughout and bound with silk binding, full plaited valance fringed, two breadths in each curtain—chintz at 8d. per yard, and lining at 5½d. per yard ...	3 0 0	...	...	...	...
A furniture of damask at 1s. 3d. per yard for the same price.					
5 ft. spring mattress	3 10 0	...	...	...	...
5 ft. best French mattress	4 6 0	...	...	...	...
5 ft. best gray bolster and two gray down pillows	1 19 6	...	...	...	...
1 pair 12-4 super. blankets	1 14 0	...	...	...	...
1 10-4 blanket, at 18s. per pair	0 9 0	...	...	...	...
1 13-4 toilet quilt	0 18 0	...	...	...	...
	£21 11 6	43 3 0	...	...	...
No. 106.—A 5 ft. Mahogany Half-tester Bedstead, with Furniture and best French Bedding complete.					
5 ft. Spanish mahogany half-tester bedstead, panelled foot-board with carved stumps, deep cornice with circular front, rods and rings complete	£10 0 0	...	...	...	...
Furniture of best yarn dye or woollen damask, with deep worsted fringe and silk hangers for valance: damask at 2s. per yard, 2 breadths each curtain	6 0 0	...	...	...	...
A furniture of chintz at 1s. 6d. and lining at 6d. per yard for the same price.					
5 ft. best spring mattress	5 10 0	...	...	...	...
5 ft. best French mattress	4 6 0	...	...	...	...
5 ft. best white goose bolster and two white down pillows	2 17 0	...	...	...	...
1 pair 12-4 super. Witney blankets ...	2 7 0	...	...	...	...
1 10-4 super. Witney blanket, at per pair 22s.	0 11 0	...	...	...	...
1 12-4 royal quilt	1 5 0	...	...	...	...
	£32 16 0	32 16 0	...	...	...
Carried forward		1090 10 3	484 17 6	178 14 3	62 17 11

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		1090 10 3	484 17 6	178 14 3	62 17 11
No. 115.—A 5 ft. Mahogany Four-post Bedstead, with Furniture and Feather Bed, &c., complete.					
5 ft. Spanish mahogany four-post bedstead, with 5 in. foot pillars, complete	£6 10 0	...	...	...	...
Chintz furniture, lined and bound with silk binding, full plaited valance fringed, six curtains of 2 breadths each—chintz at 8d. per yard, and lining at 5½d. per yard	6 0 0	...	...	...	...
A furniture of damask at 1s. 2d. per yard for the same price.					
5 ft. best palliasse	0 18 0	...	...	...	...
5 ft. second hair mattress	2 3 0	...	...	...	...
5 ft. best gray goose bed, bolster, and two gray down pillows	7 7 0	...	...	...	...
1 pair 12-4 super. blankets	1 15 0	...	...	...	...
1 10-4 super. blanket, at 18s. per pair...	0 9 0	...	...	...	...
1 13-4 toilet quilt	0 18 0	...	...	...	...
	£27 0 0	27 0 0	...	...	...
No. 88.—A 4 ft. Mahogany French Bedstead, with Canopy, Furniture, and best French Bedding complete.					
4 ft. Spanish mahogany French bedstead, with circular canopy fixed to ceiling	£7 1 0	...	...	...	...
Chintz furniture, bound with silk binding, deep fringe to canopy, curtains to hang all round the bed—chintz at 10d. per yard, and lining at 5½d. per yard	4 15 0	...	...	...	...
A furniture of damask at 1s. 4d. per yard for the same price.					
4 ft. best spring mattress	4 10 0	...	...	...	...
4 ft. best French mattress	3 6 0	...	...	...	...
4 ft. best white goose bolster and white down pillow	1 17 0	...	...	...	...
1 pair 10-4 super. Witney blankets ...	1 10 0	...	...	...	...
1 9-4 super. Witney blanket	0 8 6	...	...	...	...
1 10-4 toilet quilt	0 14 0	...	...	...	...
	£24 1 6	24 1 6	...	...	...
JAPANNED-DRAWERS.					
3 ft. wide, with four drawers, any colour	£1 3 6	...	1 3 6	1 3 6	1 3 6
3 ft. 6 in. wide, with three long and two short drawers	1 11 6	3 3 0	...	...	3 3 0
MAHOGANY DRAWERS.					
Mahogany chest, 3 ft. wide and 3 ft. high, French polished	2 2 0	...	...	...	...
Ditto 3 ft. 6 in. wide and 3 ft. 6 in. high	2 5 0	4 10 0	4 10 0	4 10 0	...
Ditto 3 ft. 6 in. wide and 3 ft. 6 in. high, with circular fronts	2 5 0	...	...	...	...
Ditto 3 ft. wide and 3 ft. high, with deep bottom drawer	2 15 0	...	...	...	...
Ditto Spanish mahogany fronts, 3 ft. 6 in. wide, and 3 ft. 6 in. high ...	3 5 0	...	...	...	...
Carried forward		1149 4 9	490 11 0	184 7 9	67 4 5

		No. 1.	No. 2.	No. 3.	No. 4.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		1149 4 9	490 11 0	184 7 9	67 4 5
Mahogany chest, with round corners and plinth, with deep drawer to the ground	3 5 0	6 10 0	6 10 0	...	...
Ditto very rich Spanish fronts, with extra deep drawers, round corners, French-polished, and tumbler locks	5 0 0	...	...	...	...
French ditto, with additional ogee top drawer, very superior	5 5 0	10 10 0	...	...	...
JAPANNED WASH-STANDS AND TOILETTE TABLES, ANY COLOUR.					
Wash-stand, 1 ft. 8 in. wide, with one drawer	0 4 9	0 4 9	0 4 9	0 4 9	0 4 9
Ditto with turned legs	0 6 6	0 6 6	...	...	...
Ditto ditto, 2 ft. wide	0 8 0	...	...	...	...
Ditto ditto, 2 ft. 3 in.	0 9 0	...	...	...	...
Ditto ditto, 2 ft. 6 in.	0 10 0	...	...	...	...
Ditto ditto, 2 ft. 9 in., with bottom shelf and two drawers	0 13 6	...	...	...	...
Ditto ditto, 3 ft., very stout	0 15 6	...	...	0 15 6	...
Ditto ditto, 3 ft. 6 in., with holes for two basins	1 0 0	...	...	2 0 0	2 0 0
Ditto ditto, 4 ft.	1 4 0	...	...	2 8 0	2 8 0
Dressing table, 2 ft. 6 in. wide, with one drawer	0 4 9	0 4 9	0 4 9	...	...
Ditto 2 ft. 9 in., with turned legs ...	0 7 6	0 7 6	...	...	...
Ditto 3 ft., with turned legs	0 9 0	...	...	...	...
Ditto 3 ft. 6 in., with two drawers ...	0 12 6	...	...	...	...
MAHOGANY WASH-STANDS AND TABLES.					
Mahogany frame wash-stand, with two drawers and marble top, 2 ft. 6 in. wide	1 10 0	3 0 0	3 0 0	...	...
Ditto 3 ft. wide	2 2 0	4 4 0	8 8 0	...	...
Ditto 3 ft. 6 in. wide, with holes for two basins	2 18 0	5 16 0	...	...	...
Ditto 4 ft. wide ditto	3 15 0	7 10 0	...	...	...
Ditto ditto, with round or octagon pedestal ends and ogee front rails ...	3 5 0	6 10 0	6 10 0	...	...
Ditto serpentine front, with marble shape back	3 15 0	7 10 0	...	...	...
Ditto 3 ft. 6 in., on column standards	4 10 0	...	...	...	...
Ditto 4 ft. wide, with double or single carved scroll legs, and serpentine fronts and ends, having two basin holes	5 15 0	...	...	...	...
Ditto, single, to fit a corner, with carved scroll bracket, and shaped marble top	3 10 0	...	...	...	...
Square enclosed mahogany wash-stand, with fittings complete, from ... ... £2 10 to	4 15 0	...	...	...	...
Round pedestal ditto	3 0 0	...	...	...	...
Dressing tables being made to correspond with all the above patterns, at equally low prices. The amounts are doubled to allow for them.					
DRESSING AND CHEVAL GLASSES.					
In birch, mahogany, and maple-wood frames, of every conceivable design, with and without marble trays, in sizes from the smallest to the largest, the prices ranging from 5s. to 70s.		25 0 0	8 0 0	4 0 0	1 10 0
Carried forward		1226 18 3	523 8 6	193 16 0	73 7 2

				No. 1.			No. 2.			No. 3.			No. 4.		
				£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward				1226	18	3	523	8	6	196	16	0	73	7	2
TOILET SERVICES.	£	s.	d.												
A complete set of white ware	0	3	6	0	3	6	0	3	6	0	3	6	0	3	6
Ditto blue and white	0	5	6	0	5	6	0	11	0	0	11	0	0	11	0
Stone china ditto, very stout	0	9	6	...			...			...			...		
Ditto ditto large size basin	0	10	6	...			...			...			...		
Ditto marble pattern	0	10	6	...			1	11	6	0	10	6	...		
Pure white ditto, with neat coloured rim	0	12	0	2	8	0	0	12	0	...			...		
White and gold ditto	1	0	0	2	0	0	...			...			...		
TOWEL-HORSES.															
Towel-horse, with turned rails, and japanned any colour	0	2	0	0	4	0	0	6	0	0	6	0	0	6	0
Ditto with two top-rails	0	2	6	...			...			...			...		
Mahogany ditto, French-polished ...	0	5	0	1	0	0	0	10	0	0	5	0	...		
Ditto, with scroll top	0	6	0	...			...			...			...		
Ditto very stout, with three top-rails...	0	7	6	...			...			...			...		
Ditto, with shaped standards	0	14	0	1	6	0	...			...			...		
COMMODE-CHAIRS.															
Mahogany arm-chair, with commode-pan	1	5	0	1	5	0	1	5	0	...			...		
Bedroom easy-chair, enclosing night-commode, stuffed and finished in canvas	1	10	0	1	10	0	...			...			...		
Ditto ditto, with mahogany scroll arms, on best socket castors, covered in figured canvas	2	0	0	2	0	0	...			...			...		
NIGHT-COMMODES.															
Mahogany, with pan, complete ...	1	1	0	1	1	0	1	1	0	1	1	0	...		
Ditto circular front and lift-up top ...	1	2	0	...			...			...			...		
MAHOGANY BED-STEPS.															
Two-tier mahogany bed-steps, carpeted, and enclosing night-commode	0	15	0	0	15	0	0	15	0	0	15	0	...		
Ditto ditto moulded ogee front, and French-polished	1	0	0	1	0	0	1	0	0	...			...		
Ditto ditto serpentine front	1	0	0	...			...			...			...		
Three-tier ditto	1	5	0	2	10	0	...			...			...		
Ditto ditto moulded ogee or serpentine front	1	15	0	...			...			...			...		
BIDETS.															
Mahogany bidet and pan, complete ...	0	17	0	1	14	0	2	11	0	1	14	0	...		
Ditto larger size and stouter	1	8	0	5	12	0	...			...			...		
JAPANNED WARDROBES.															
Japanned single wardrobe, with drawers and sliding trays	4	10	0	...			...			...			...		
Ditto ditto with deep plinth drawer, japanned and ornamented in the best style	5	0	0	...			...			...			...		
Lady's single wardrobe, with deep bonnet drawer, and fitted up for hanging dresses, japanned in the best style	4	0	0	...			4	0	0	4	0	0	...		
Winged wardrobe, the centre part with seven drawers, the wings fitted up for hanging dresses, japanned in the best style	7	15	0	7	15	0	...			...			...		
Carried forward				1259	2	3	537	14	6	206	2	0	74	7	8

		No. 1.	No. 2.	No. 3.	No. 4.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward		1259 9 3	537 14 6	203 2 0	74 7 8
MAHOGANY WARDROBES.					
Mahogany single wardrobe, with sliding trays and drawers	£ s. d. 6 0 0	...	...	...	...
Ditto ditto with carved capitals and mounted panel doors, and French-polished	8 10 0	...	...	...	...
Ditto ditto with bold ogee cornice, carved capitals and moulded panel doors, of very fine wood, French-polished	10 10 0	21 0 0	10 10 0	...	...
Lady's Spanish mahogany single wardrobe, with deep bonnet drawer, sliding trays and drawers on one side, and wing fitted up for hanging dresses, French-polished	9 10 0	...	...	...	...
Spanish mahogany wardrobe, with three doors enclosing one wing for hanging dresses, two long and two short drawers, and sliding trays, French-polished	16 0 0	16 0 0	...	...	...
Mahogany winged wardrobe, with drawers and bonnet cupboard in the centre, and both wings fitted with pegs for hanging dresses ...	18 0 0	18 0 0	...	...	...
Spanish mahogany winged wardrobe, the centre part projecting, fitted with trays and drawers, the wings fitted up for hanging dresses, centre door panelled with silvered British plate-glass, and French-polished ...	21 0 0	...	...	...	...
Spanish mahogany winged wardrobe, enclosed with four doors, the wings fitted up for hanging dresses, the centre with drawers and sliding trays, French-polished	24 0 0	...	...	...	...
BED-ROOM CHAIRS.					
Japanned bed-room chair, with rush seat	0 2 0	0 12 0	0 6 0	0 6 0	0 6 0
Stained rosewood ditto, with cane seat	0 2 6	...	...	...	...
Ditto light colour, or stained rosewood or mahogany, with cane seat ...	0 3 0	...	...	1 16 0	0 18 0
Sweep back chair, with beaded cane seat, stained any colour	0 3 6	...	...	...	...
A stouter ditto, with best cane seat, and best polished	0 5 0	3 0 0	3 0 0	...	...
Cherry-tree chair, with cane seat, French-polished	0 6 0	7 4 0	...	...	...
Sweep back ditto, the best quality ...	0 8 0	...	...	...	...
Window cornices and curtains, to match bed furniture		26 5 0	12 12 0	6 0 0	2 10 0
Bed-room carpets		40 0 0	20 0 0	10 0 0	5 0 0
TOTAL		1391 10 3	584 2 6	221 4 0	83 1 8

NOTE.—When the sums entered in the columns are multiples of those annexed to the article, it shows that one, two, or three of them are calculated on.

NURSERY, EXTRA.

CHILDREN'S CRIB BEDSTEADS AND BEDDING.

		£	s.	d.
The sides to slide out, finished in the best manner, and japanned in any colour:—				
3 ft. 6 in. by 1 ft. 6 in.		0	16	0
4 ft. by 2 ft.		1	0	0
5 ft. by 2 ft. 6 in.		1	2	0
Ditto in mahogany, French-polished, with cane sides, and foot-end made to slide out		2	2	0
Best Spanish mahogany ditto	45s. to	3	3	0
Flock mattress for ditto		0	10	0
Brown wool ditto		0	12	6
White ditto ditto		1	0	0
Hair ditto		1	5	0
Feather bed and pillow		1	2	6
Ditto in bordered linen tick		1	10	0
Bath blankets, the pair	from 8s. to	0	10	6
White toilette quilts	from 5s. to	0	7	6

CHILDREN'S SWING COTS.

		£	s.	d.
Mahogany frame swing cot, with striped sides	from 28s. to	2	0	0
Mahogany frame ditto, with cane sides and head, French-polished		2	10	0
Nursery bath		0	14	0
Ditto larger		1	3	6

SECT. 2.—SELECTION OF FURNITURE.

506. THE STYLE of furniture which is to be chosen will influence the price very considerably, inasmuch as upon it will depend in great measure the amount of ornamentation which is required, in order to carry out the whole with that degree of consistence and propriety which marks the well-ordered establishment. This last point is of great consequence to those who like to have everything "in keeping," a term which is readily understood, though not so easily defined. Nothing looks worse than to see in the same room a certain number of articles with curved lines and scroll ornamentation, whilst the remainder are in straight lines, angular in their forms, and altogether as plain as possible. Much depends upon the fashion of the day, which at one time demands plain woods, and at others the introduction of inlaid surfaces and buhl-work. Of course it will be readily understood that a square table with small, plain, and straight legs, will cost very much less than another with an inlaid top, moulded edges, and carved sides and legs. The same remark applies to chairs, sideboards, cheffoniers, and even to bedsteads, in each of which a comparatively small outlay will give all that is requisite for comfort, the remainder being solely intended to catch the eye. To those who have a long purse, expensive and highly ornamented furniture is a luxury befitting their means, and calculated to do good by employing skilled labour; but it should always be remembered that this outlay is not necessary to the comfort of a family, and that it is not only a present increase price of which is assented to, but that in all future additions the same style must be carried out, or the whole will partake of a piecemeal character, and will look much worse to a tasteful eye, than if none of the articles had any pretence to a high degree of ornament. In order to indulge in tasteful furniture at a low price, the public are often tempted to deal with manufacturers who get it up without any regard to durability, and the consequence is, that in a very few months the repairs often amount to the difference between their price and that demanded by highly respectable firms. The young housekeeper, therefore, should make up his mind what he can afford to lay out, and then he should go to some firm well known to him or his friends, as makers of good sound articles, and deal with them as far as it will go. The lists in the last section will be a guide to some extent in this respect, but of course they may be varied to suit the particular taste of the individual, or the circumstances of each case. With the ever varying taste in this country in reference to style, it would be useless to enlarge upon the different forms peculiar to the times of Louis Quatorze, the Renaissance, the Elizabethan age, or the still older Gothic. These are all now equally prized by the different admirers of each, and all are almost equally costly, and unsuited to the rigid economist, who will do well to keep as much as possible to straight lines, and mouldings capable of being worked with a plane, considering that carvings and inlaid

work require an expenditure of time and material which will compel a strong demand upon his pocket.

507. SECOND-HAND FURNITURE is to be bought by a good judge at two-thirds the price of new, or even less than that if sufficient time can be bestowed upon the unpleasant task. Sales by auction are the places where this can best be done, as the dealers in these articles demand a price for them far above that which they fetch under the hammer, and often beyond their worth when new. But these sales are dangerous places for inexperienced persons, who frequently are tempted by what they consider bargains, when not exactly what they want, and often when not having a place for them. The brokers will also try to prevent a young hand from obtaining what he wants, by bidding against him; and in some small towns they conspire together and share the loss if they are obliged to give more than the real value in order to prevent the purchase by an intended customer of their own. With a view to prevent this, it is often necessary to attend two or three sales before anything can be bought, bidding only once or twice at the price already fixed upon, and then going no higher. After this plan has been persevered in for some days, the brokers find that their intended victim is too wary to be caught by them, and give up in despair, after which he may compete with them on fair terms. But in all cases the catalogue should be marked beforehand, with the outside prices which the lots are valued at, and then these should not be exceeded, however tantalizing it may be to see a neighbour run away with a pet article at a small advance upon the original estimate. The chairs, tables, &c., and in fact all articles framed in wood, should be carefully examined as to their state, particularly as to their being made of unseasoned wood, which in second-hand furniture is very easily detected. Surfaces out of level, open joints, rickety legs, and cracks in the wood, are plainly to be seen if present, and should be noted as marks of bad materials, or make, or both, and therefore to be avoided with great care. Curtains, carpets, and other textile fabrics may often be bought at sales at a very low price apparently; but it must be remembered that they seldom fit their intended places, and that, consequently, a great waste occurs. Besides this, although they may look pretty good at the time, yet it should be known that wear-and-tear does not show its marks for some time after it has really left them. There is on every fabric a certain amount of surface, colour or bloom, which has to be worn away, or faded, before anything is evidenced to the eye; and it is not until this effect is absolutely produced that the young manager will be able to see that any deterioration has taken place. On a Brussels carpet, for instance, there is, we will say, a thickness of wool amounting to an eighth of an inch; half of this may be gone, and yet the other half will cover the foundation and keep the pattern and the colours tolerably bright and plain. At this stage in the wear, the inexperienced purchaser will, perhaps, fancy that the carpet is "nearly as good as new," but he will find that it is more than half-worn out, and that in a very short time the linen threads will make their appearance and the colours will be replaced by a skeleton of a drab colour. It is the same with the fading of damasks, and other woollen curtains over which the sun exercises a great power for some time before the actual loss of colour appears. Yet the mischief is done, and even if they are taken down and put by in carefully-closed drawers, the loss of colour will still go on. Hence, it is necessary not only to take into consideration how they look, but how long they have been up, if that information can be gained. But in spite of these drawbacks, second-hand window-curtains can be bought much more cheaply than new ones, if the purchaser is contented with those which are not of the newest patterns and style; for these cannot possibly be obtained, except in very rare instances, where furniture is put up to auction almost as soon as it has been bought. It is seldom that window-curtains fetch more than one-quarter of their original cost at sales by auction; and if the cornices and drapery are at all suitable to the windows for which they are to be purchased, they may well be selected by those who wish to furnish at the lowest possible outlay. Beds and bedding generally fetch two-thirds of their cost price, as they fit any room, high enough to take their cornices; sometimes, however, a bargain at about one-half the original cost may be obtained, and by constant attendance at sales such a consummation may generally be looked for, but not without the loss of many days in waiting for it. Glass, china, and cutlery may also be bought very cheap; but kitchen utensils had much better be selected from the stock of a respectable ironmonger, as it is difficult to estimate exactly the amount of wear which they have been subjected to. Some of the more expensive articles, such as meat-screens, turbot-kettles, or the like, may however be bought with advantage, if they appear to be in good condition, and do not show

any very great amount of wear. Linen is very seldom to be speculated in with advantage by any but very good judges, which, unfortunately, young housekeepers, seldom are; but sometimes blankets, counterpanes, and other bedding may be bought cheap enough, if the chance of disagreeable concomitants is not considered to forbid their purchase.

508. In the ranks of life for which this book is intended, certain woods are, and have been for some years, devoted to particular purposes and rooms. Thus, for hall furniture, oak and mahogany are equally in vogue, the former being perhaps the more generally employed. In the kitchen and offices, beech and ash are usual for chairs, inasmuch as they require extra strength, and without any regard for appearance. The tables for the kitchen are either of deal or wainscot, the latter being preferred by some, though without any sufficient reason, as a well made deal table is quite as lasting and more easily moved from place to place, which is a great recommendation to some servants. In the dining-room, mahogany is the prevailing wood; Spanish, when the purse will admit of it; and if not, Honduras. Stained American birch is now sometimes substituted for this wood, being much cheaper even than the lower qualities of mahogany; but the artificial colour soon flies, and leaves a dingy looking surface, which is not by any means to be admired. If there is any chance of furniture being sold, birch articles are a very bad investment, as they fetch very little, while sound mahogany furniture always brings something like its value. Oak is sometimes adopted as the material for the dining-room suite, but it has rather a cold look, and does not bear so good a polish as mahogany. Still, there is no objection to it in point of economy. For the drawing-room there is no wood equal to walnut in appearance or durability, for though some may prefer rosewood, yet it will always be found that walnut will keep its surface better polished, and will stand wear far better, being a tougher wood, and less liable to crack or shrink. Satinwood is to some people very ornamental, and when quite new it looks well in a room furnished throughout with light and elegant forms. But it soon loses its bright and silvery lustre, and then looks little better than birch. For bed-room furniture there is no wood equal to mahogany; it keeps up a polish, without renovation, for a great length of time, does not shrink, and retains its colour, which is in fact improved by age. Birch is here also substituted for it, and looks pretty well at first, but it soon loses its colour, and is very liable to cast, especially if not thoroughly well-seasoned. Mahogany, if too new, will crack and shrink, but it does not twist and warp like other woods. The head-posts and frame-work covered by the furniture should be of oak or beech, which are tough and capable of resisting the strain which is thrown upon these parts. The joints also should each have a deep mortise and tenon, with two screws, which add greatly to their stiffness and freedom from creaking, a very common and disagreeable fault in badly-made bedsteads. Well-seasoned deal painted, or japanned as it is called, looks much better than discoloured birch after the lapse of a few years; and with chintz furniture the colour may always be made to harmonize, and look perhaps even better than the naked wood, as seen in mahogany itself. The inferior kinds of walnut are coming more generally into use as the material of bedroom furniture, for which they are well-suited; and it may shortly be expected that this wood from Spain and Italy may be obtained at prices to justify its introduction even into the bedrooms of economical people. With regard to the material for bed-hangings, there is, I think, nothing equal to chintz. When well printed it lasts for many years without loss of colour, and always is sweet and wholesome, which cannot be said of woollen materials. Dimity is equal to it in these respects, but it lasts clean so short a time, that it is not suited for any but country wear. On the other hand, the glazed surface of the chintz prevents the dirt from adhering, and the consequence is, that it only requires to be washed and calendered every three or four years, instead of once or twice a year, as is the case with dimity. For the tops of wash-hand stands marble is highly prized by some people, but it is very apt to cause the destruction of glass and crockery by careless contact with it, and on that account is scarcely to be considered an economical material, though very clean looking and elegant, and not very extravagant in price. In choosing carpets for bed-rooms, the careful and experienced hand will always lay down the same pattern in all the rooms, so that in future years, when parts become worn out, the carpet from one of four or five rooms may be taken to mend the others, and afterwards, as wanted, another still may be sacrificed to the same useful purpose. This is a very important consideration, as very frequently one half of a carpet in a bedroom is quite worn out before the circumference is at all injured, and by making up the deficient parts in the manner above described, the whole is restored to a very fresh and vivid state of youth, fairness, and beauty.

SECT. 3.—REPAIRS AND RENOVATIONS.

509. THE REPAIRS AND RENOVATIONS OF FURNITURE in every house form a very important item in the yearly expenditure, amounting on the average to about 5 per cent. upon the original outlay. For the first year or two little will be needed, though it will generally be found that some few things have been forgotten and must be obtained as they are wanted, so that even then this calculation will not be too high, and often not sufficient for the purpose. In furniture, as in most other things, there is no limit to the desires for extra articles, if the taste for novelty and fashion is allowed full scope, while, on the other hand, it is astonishing how small a sum will suffice to furnish and keep in repair a small house, putting in only such articles as are really wanted for use. No furniture requires such constant repairs as the badly made and cheap imitations of fashionable and "tasty" articles, by which the well-meaning, but unwary young couple, are deluded with the full intention of pleasing each other, but with the exactly opposite result; as when they find that instead of adding to their comfort, and at the same time feasting their eyes with graceful forms, it destroys the former by its inefficiency, and disgusts the latter by its loss of form and colour, the conclusion comes too late, but with perfect certainty, that a wrong selection has been made, and that plain forms and materials would have been far more advantageous in all respects.

SECT. 4.—HIRE OF FURNITURE.

510. HIRED FURNITURE may generally be obtained in towns of any size, but the charge is high, as compared with the actual wear and tear. If, however, the intention is to go into a house only for a short time, as, for instance, a year or two, it will often answer better than risking the loss upon a sale; but it can seldom be obtained for less than 20 per cent. on the outlay, and that is exclusive of carpets, curtains, plate, china, and linen. As these articles are easily packed up and transported from place to place, they may generally be purchased without risk of loss, and may be removed at the expiration of the term to any other locality. Brokers invariably make a great reduction in their charges for the hire of furniture, if the parties hiring will condescend to use it second-hand, and in that case they will often be content with 10 or 12 per cent., or even less; but for good-looking and modern furniture less than 16 or 20 per cent. will seldom suffice. Plate, glass, and china may frequently, but not always, be hired; the first is, however, a very moveable article, and always useful. The two last may almost always be hired at the china and glass shops, paying a certain hire, and the full price for such articles as are cracked or broken. Bed-room ware is generally found by the broker hiring out the remainder of the furniture, but if not, it must be purchased or hired; neither of which will cause an extravagant outlay.

BOOK IV.

DOMESTIC SERVANTS, AND THEIR DUTIES.

CHAP. I.

GENERAL REMARKS.

SECT. I.—DUTIES OF SERVANTS TO THEIR EMPLOYERS.

511. That "service is no inheritance," is continually dinned into the ears of those who are much brought into contact with the class of our fellow-beings commonly called servants. No one, I believe, will deny the truth of this assertion, and I suspect few of us would like to be placed in a position to judge for ourselves; for however comfortable a servant may be made, still there is the constant subjection to the caprices of a fellow-being, who may be as perfect as is consistent with human nature, but still will at times be led into some little act of oppression. It is a very old and true adage, that "bad masters make bad servants;" that is to say, that human nature when ill-treated will rebel, and will be induced to overstep the bounds of propriety and to go far beyond the limits which were originally perhaps set as those which ought to limit the conduct towards the employer. The duty of submission is clear, not only from the revealed law, but from that natural one which teaches us that without the fulfilment of all contracts made between man and man, society cannot possibly exist in a civilized state. The servant is not a slave who is, against his will, compelled to continue under the orders of a hard taskmaster; but he or she makes a bargain with an employer to enter his service for a certain time and do certain things, which are generally pretty clearly defined, receiving in exchange a definite sum of money, with board and lodging, and sometimes clothing and washing. The arrangement therefore is a mutual one, and as such each party engages to perform his share of the contract, with the understanding that a notice to quit shall be given if either considers that the other is not completing the terms of the agreement. All these several points must therefore be entered upon here, and their bearings one upon the other weighed and examined with care and attention.

512. THE SERVANT, as a matter of course, without any definite form of words, always is expected, and consequently tacitly engages, to be *honest*, *sober*, *diligent*, *civil*, and *clean*. An employer, therefore, does not require an applicant to undertake in set terms to develop in his person a normal amount of honesty, sobriety, diligence, ability, and cleanliness; and, on the other hand, the good servant would generally consider himself insulted if he were cross-examined upon them. These qualities may form the subject of inquiry from the previous employer, in the form of a character; and the person who receives a good character in these respects, and afterwards finds that it is not deserved, has a right to find fault with the party giving it, if he has wilfully been guilty of a deceit; but with the servant who commits a breach of any of these good qualities he finds fault, not because he has given himself a good character in set words without deserving it, but because he is really not fit for the place which he has taken, and the employer therefore makes up his mind to discharge him, with or without notice, according to the extent of his vices or indiscretions. As far as these qualities are concerned there can be no two opinions, even among servants themselves, for no one of them will contend that they are not all necessary for the servant's well-being quite as much as for that of the master or mistress. In fact, they are no more necessary for service than for any other state of life where a living is to be gained, and without them few fortunes would be made in any state of society. The servant, therefore, is not degraded in any way by a careful adherence to the rule which enforces them, and which is carried out strictly in all well-conducted families. But beyond these generally understood points, the servant has always a special understanding as to what he engages to do, and the more definite this is the better for all parties concerned. Nothing leads to more misunderstandings than the often-repeated assertion, "Oh, ma'am, I did not undertake to do that!" which may be true enough to the letter, though often quite opposed to the spirit of the agreement. It is said that a clever lawyer can always drive a coach and four through any act of parliament, and so a tricky servant will always be able to find a loophole to creep out of his work; but the more clear the arrangement the less likely is this to occur; and if the details of the work are always reduced to writing, there is still less probability of a mistake. The young housekeeper will often excuse herself from this by saying that she does not know how to draw up a list of the several duties of her servants; but if this is the case, let her simply ask the applicant what she will engage to do, and at once write down each item. Here she

will often be met by the question, "What do you require, ma'am?" and if she is not prepared she will flounder, and by showing her ignorance she will open the way to a future feeling of superiority, which is fatal to a continuance of the respect that ought always to be felt by the subordinate. The class from which household-servants are drawn are very quick in making comparisons and detecting ignorance, and while they never fail to submit to real knowledge, they as surely take advantage of any defect. Masters and mistresses, therefore, should do their utmost to arrive at a theoretical, if not a practical, knowledge of the several departments over which they take the superintendence, or if they fail to effect this, they had better at once confess their ignorance and place themselves in the hands of their servants. By this last method they may be imposed upon for a time, but by confessing ignorance, and at the same time asking for information, the self-love of the servant is gratified, and there is not that tendency to glory in deception which exists when the mistress and her maid are trying to outwit each other. Besides which, the former has every opportunity of making herself acquainted with the necessary details, and will thus qualify herself for the management of a future servant, if the original teacher should refuse to obey her orders. But there is one point in which servants are unquestionably wrong, where they carry it out as they too frequently do—I allude to the general tendency to do things their own way, when they think it is the right one. Masters and mistresses are the sufferers if they are wrong; and when they issue an order, and desire that it may be strictly carried out, there can be no excuse for its non-fulfilment. In many cases the servant may, with propriety, suggest an alteration, but if the employer persist in adhering to the original order, it should be the object of the servant to do the best to carry it into execution. It is true that it is often very trying to a servant, as a cook, or a groom, to be told to do a thing which will inevitably result in a loss of credit to themselves; but still it is better to gain a character for general good behaviour than for anything else whatever. Servants who "know their business" will always be able to find situations if they also "know their place;" but if they do not, they will gain the ill-will of every master, and however useful they may be, they will never long retain their appointments. Hence, I should always recommend a servant to practise rigidly this deference to the opinions of those who have the right to choose for themselves, and however provoked he may be at the time, he will find in the long run that he will gain in his own self-respect and in the estimation of those who have it in their power to advance his interests. There is no occasion for cringing servility, and few like it; but no one is pleased by having his orders disobeyed, whether right or wrong. At the same time there is a limit to obedience, for no servant can be expected to do what he considers positively wrong; and it is to be hoped that he will seldom be placed in such a position. In fine, then, the duties of a servant may be summed up as consisting in a constant and earnest desire to do that which he engages to do, not only to his own satisfaction, but also to that of his employer, and when there is any difference of opinion to submit his own to that of the person who has a right to expect the priority.

SECT. 2.—DUTY OF THE EMPLOYER TO THE SERVANT.

513. Whilst the course to be pursued by the servant is plain and straight-forward, that to be followed by the employer is not always so clear. It unfortunately happens that servants are impressed with the idea that their interests are antagonistic to those of their employers, and the consequence is that it is very difficult to do what is best for them, without injuring the master or mistress. The duty to one's neighbour clearly applies in this case, in theory at all events, and if it could be fully carried out no one would rejoice more than I should. There is nothing more painful to witness than the treatment of a servant in a way which we should not like to submit to ourselves; and yet in nineteen cases out of twenty I fully believe that the scriptural rule, if carried out, will fail. It should be remembered that it is rarely tried for many years together, but that by the time the servant finds out that the master is really what he professes to be, the former has committed some gross act which has properly drawn down upon him a dismissal from the further superintendence of the latter. If a well-disposed child is taken from a properly conducted school, and placed at service with a master and mistress who will treat her as they would themselves desire to be treated under similar conditions, the result will be in a majority of cases a most gratifying one; and if this could be done more frequently, the present feeling might perhaps be broken through. But the experiment, to be successful, requires all the elements to be in a perfect state of working, which will seldom be the case, for either the disposition of the

child will be naturally bad, or it will be spoiled at home, or the school will be mismanaged, or, finally, the master or mistress, or more commonly both, will be inadequate to the task. We all know how difficult it is to bring up a child properly, even when it knows that it possesses the love of its parents, and that they are ready to give up anything to secure its welfare. Now, if this is confessedly hard of execution, how much more so is the proper management of a person who feels that he or she is only employed to do that which is disagreeable to the party making the engagement, and who is fully aware that either, from caprice or misconception, a forfeiture of favour and occupation may take place. The first thing, therefore, which should be done in the management of servants, is to gain their confidence, so as to make them feel that they have some certain and sure guide by which to shape their course. It is not to be expected, while human nature is what it is, that this shall be positively depended on, but by comparison it may be, and when it is the case, one great difficulty on both sides is resolved. Consistency I hold to be the great principle of management, whether of small bodies or large; and even extreme severity, if fixed and unerring, is better than alternate fits of over-indulgence, and the reverse. A servant, like a child, and in fact like every human being, will often commit a fault, and will require to be corrected in some way; but if this is sometimes entirely omitted, and at others the correction is administered without the previous existence of a fault, a bitter feeling of injustice and oppression is sure to be engendered, which invariably leads to a destruction of all those fine and generous feelings of mutual dependence which every person would like to encourage in others, however much he may in his own person oppose their development. Except the relation of parent and child, nothing can be more beautiful than that sometimes existing between the employer and the employed; and, though rare, instances are not unknown, even in these degenerate days, of servants bearing a state of almost absolute starvation rather than desert in their adversity those who have treated them well and kindly in their prosperity. But, as I have before remarked, we must not expect this state of perfection as a rule, and we must therefore treasure the exception the more when we meet with it. The ordinary feeling on the part of the servant is a very different one; and the master who attempts to carry out his theory of perfectibility will end by condemning all servants as alike unfit to be trusted. On the other hand, the employer who expects, by simply issuing his orders, to prevent all gossiping, or idling, or consorting with "followers," will equally be disappointed; and will in most cases fail even more signally than the believer in Utopia. Servants have their feelings and passions as strong as, or perhaps often stronger than, their masters, and they will indulge them somehow or other. It becomes a question, therefore, how far they may safely do so without any injury, or with as little as possible, to either party. It appears hard to prevent all social intercourse among servants and their friends, by forbidding the admittance of any visitors at all; and many experienced housekeepers are of opinion that it is better to allow them at stated times than to risk the addition of the crime of hypocrisy. Others, again, contend that if visitors of any kind are admitted, those of an improper character are sure to be included, and that the larder and cellar suffer in consequence. From a long and intimate acquaintance with both systems, I am inclined to believe that both are more or less defective; for while I am obliged to admit that servants, as a class, are not to be trusted implicitly, and cannot be treated as every well-thinking person would wish them to be, I am also sure that an excessive and stringent prohibition of all visitors is equally, or even more, objectionable. Solitary confinement we know to be the most severe punishment in the power of man to inflict, and no force short of stone and iron will compel the submission to it: hence, the servant who is ordered to hold no intercourse whatever with her fellows, is sure to disobey as far as she dare, and the very act of deception leads to other and worse faults. If, however, the mistress will permit on certain days any respectable visitor to enter, with or without refreshment, there is an end to all reasonable ground for complaint. It is well in all cases that the servant should announce the fact, and give up the name and degree of acquaintance which she has with the person making the visit. In this way there is some check upon improper intimacies, and yet there is an obvious attempt on the part of the employer to indulge her servant.

514. Customary Frauds are in all cases the fault of the master or mistress, for without their connivance and permission they could not take place. If the tradesmen supplying the house are to be chosen by the cook or butler, it cannot occasion surprise that they should endeavour to carry favour with them by a present of a value in proportion to the amount of custom. In process of time this has gone on until it has become the rule, in most towns of any size, for the marketing servant

to receive a distinct per centage upon the outlay, either in the shape of money or goods; and this rule prevails I am afraid with all classes of servants, from the cook to the house-steward. Indeed, in all trades it is now the custom to present a certain sum to the party bringing the order, being, in fact, a commission, and this is calculated in the price;—that is to say, if the agent is in a position to demand it, and to *remove the dealing on its refusal*. In many large establishments the Christmas fees are, to a large amount, paid to servants of all classes who have the means of insisting upon the payment by a real or pretended power of removing the custom. Now, all this is at once put an end to if the master and mistress take care to select their tradesmen, and to make all the payments with their own hands. It is too often by attempts to save trouble that servants are led into temptation by their employers, and in this way, most assuredly, they are really and truly *led* into temptation.

SECT. 3.—EVIL TENDENCIES OF ANTAGONISM OF MASTER AND SERVANT.

515. From the foregoing sections it may be gathered, that the interests of the two parties of whom I have been treating are "wide as the poles asunder;" and such is unhappily the fact in the present day, though it appears to have been formerly otherwise, and may be so again. If both parties would only see their true interests distinctly, they would in many instances amend their proceedings, and while the servant would attend more to the wishes of his master, the latter would also consult the feelings of his servant. When human beings are spoken to as if they were convicted felons, no one can wonder that they should partially act up to the character given them, or at all events that they should indulge in petty larceny instead of felony. We do not, perhaps, very often now hear this peremptory style, but many times in my life I have been an unwilling witness to accusations of theft, or some equal crime, with a sharp imputation of added insolence when the crime was denied. A servant when accused of such an offence is painfully situated, for if silent, the act is admitted, and if he denies it he is insolent. Some people "never allow an answer," which appears to me a most unjust and unwarrantable proceeding. To an *order* no answer is perhaps justifiable, but when a crime or an offence is imputed, surely a reply is not only allowable, but it is called for by all the rules of justice and propriety. The real fact is, that very few of us are fit for the command either of servants, children, or selves; and that the less fit we are, the more we are inclined to shift the blame which truly devolves upon us to those shoulders which cannot remove the load. Hence arises, in many cases, that feeling of injustice done and of class-prejudice which prevents the possibility of any one, however perfect, carrying out his principles to a beneficial result.

SECT. 4.—ENUMERATION OF THE SERVANTS HEREIN ALLUDED TO.

516. In this book, incomes above £1000 a-year are not included, and consequently they will not be alluded to. Those only which are calculated for the above establishment, as well as the servants required for the three inferior grades, will be comprehended under the following enumeration:—

First.—An income of £1000 a-year, clear of all other expenditure, and devoted solely to housekeeping and rental, will afford the following servants:—1st, a butler, or man-servant out of livery; 2nd, a coachman or groom; 3rd, one or two housemaids; 4th, a cook; 5th, a lady's-maid, in some cases.

Second.—The income No. 2 will only afford three servants, viz.—1st, a page, or a general man-servant; 2nd, a housemaid; and, 3rd, a cook. This provides also for the keeping of a single horse or pony.

Third.—The income No. 3 will not allow even of the above domestics, and a maid-of-all-work must be the means of doing what is required, aided in some cases by a girl, or in others, by the younger members of the family.

Fourth.—The income No. 4 is barely sufficient to provide what is required for the family in the shape of lodging, food, and raiment, and therefore no servant can be kept, or, at all events, only such a young girl as it is quite useless here to allude to.

517. THE VARIOUS SERVANTS here to be described, with their duties, will therefore be—1st, the men-servants, consisting of *the butler*, *the general man-servant, in or out of livery*, and *the page;* 2nd, the females, as *the house-maid*, *the lady's-maid*, and *the cook*. Besides these, *the gardener*, *the coach man*, *the laundry-maid*, and *the dairy-maid*, will be treated of under the respective heads of the Garden, the Stable, the Laundry, and the Dairy.

CHAP. II.

IN-DOOR MEN-SERVANTS, AND THEIR DUTIES.

SECT. 1.—THE BUTLER.

518. IN SUPERIOR ESTABLISHMENTS to those which come under our consideration here, the butler is a very important personage, and in appearance is often the most so in the house; but though generally dignified with the same appellation, he is in middle life shorn of a good deal of his honours, and is really a man-servant-of all-work, often undertaking an immense number of duties, from cleaning shoes and knives and forks up to the cellar management—though in this last department the master generally exercises a wholesome control, and keeps the key under his own hands. It very often happens that a boy to clean the boots and shoes is provided, who comes for a part of the day, or else, when in the country, he fills up his time between the garden and these yet more dirty occupations. Still in numberless instances the butler undertakes the following duties:—1st, the cellar, including bottling wine and stacking it, brewing beer, bottling cider, and all the incidentals peculiar to these departments, with or without the aid of a regular brewer; 2nd, cleaning boots and shoes and brushing clothes; 3rd, cleaning plate and knives and forks, and waiting at table; 4th, answering the front-door bell, and that of the sitting-room inhabited by the elder branches of the family. These offices will take up the whole of a man's time; and during his meals, and the hours when he is obliged to be occupied in brewing or other cellar duties, it is usual for the housemaid to attend to the bells and answer their summons for him. It will be manifest that a servant of this description requires considerable aptitude for his office, and he should be quick, yet methodical; for without a combination of these qualities he will scarcely get through his multifarious occupations. He must, also, possess a respectable appearance and a good address, so as to be capable of giving and receiving messages, and answering inquiries at the door in a proper manner. The temper is often tried a good deal in this situation, as is always the case when many offices are combined and concentrated in one—a good one therefore is very desirable. The following is the usual routine by which the work is arranged so as to get through all during the day. Begin at 6 o'clock, a.m., with the regular dirty work, such as boot and shoe cleaning and knife cleaning, when it is not done by a boy; this will take an hour in most families even with the aid of Kent's knife-cleaner. At 7 o'clock, brush the clothes of the gentlemen, and return them either by the housemaid or by self. At 7.30, lay breakfast. At 8, breakfast. From 8.30 till 9.30, attending family breakfast. From 9.30 till 10, washing plate used at breakfast, cleaning urn, &c. From 10 till luncheon time, may be devoted to cellar occupations, if necessary, or, in the regular way, to answering the bells. At 1, p.m., luncheon has to be laid and removed; and from that time until the hour of dinner his time is filled up with his own dinner, washing and cleaning plate, cleaning and preparing lamps, rubbing the dining-table, which most housemaids give up to the man-servant as beyond their powers. Next comes the laying the dinner, waiting at table, and washing the plate used; afterwards, removing everything, and finally taking in tea and coffee, which, with the attendance on the drawing-room bell, completes the day's duties; and these, though apparently little, are so broken in upon by conflicting occupations, that a great waste of time is occasioned. Thus, when a butler is engaged in cleaning his plate, he must have an apron on and his coat off: while so occupied a bell rings—off goes his apron and on is pulled his coat in a great hurry, and with a hasty wash of the hands (the necessity for which however is avoided by wearing gloves), he runs to the front-door or the apartment indicated by the bell. This interruption perhaps occurs from half-a-dozen to a dozen times during his plate cleaning, and therefore it is no wonder that it takes him a longer time than would otherwise be required. These several duties form separate sections, to be hereafter more fully particularised.

SECT. 2.—THE GENERAL MAN-SERVANT.

519. This servant, whether in or out of livery, combines the duties described in the last section with those of the stable-man, and often of the gardener as well. He is truly a jack of all trades, and, as is too often the case when too much is attempted, he is master of none. No servant will undertake such a situation, combining so many offices, if he can get an appointment to any one of them; and it is only therefore by an incompetent or young servant that this situation is generally filled. Still there are exceptions, and such I have known, where men like to be full of employment of a varied character, and are not over particular as to the correct fulfilment of the several details of their work. It is out of the

question to expect a man who has just been dressing a horse, after coming in from an airing, to be as clean in his person and as unruffled in his appearance as if he had not quitted his pantry except to answer a bell, and therefore every allowance must be made in such a case; but beyond this, which cannot be got over, there is no absolute necessity for a failure. If a man is quick and sharp in acquiring knowledge, he will easily master not only the details of his internal duties, but enough of the management of the stable for the purpose of bringing out a single horse or pony in tolerable condition. Of course the housemaid must undertake the answering the bell in such a case, as he will be wholly incapable of attending to it; nor will he find time for much cellar-duty, or for cleaning many boots and shoes. Except in the general arrangement of duties, his will not differ from the plan set forth in the last section. When this servant is furnished with a livery, he has generally two suits a year, which are not more than enough to keep him tidy, in consequence of the multifarious nature of his occupations. A stable-dress, or over-alls, will also be required, to enable him to get through that work; but this will last him from one to two years. The details of his duties will also be comprehended under the various sections alluded to in the last paragraph.

SECT. 3.—THE PAGE.

520. This servant is merely a younger variety of the general man-servant; but he is always in livery, with a short jacket and a profusion of buttons, from which he has received the name so commonly applied to him. The work apportioned to him will be of a very similar nature to that above described in Sect. 2; but, of course, he is not expected to do it as well. Sometimes, however, a lad in this situation, if well instructed under a butler in a previous place, will get through an immense amount of work with credit to himself, provided always that he is supervised by a master or mistress, who sees that he does what is necessary. Young people seldom have old heads on their shoulders, and however capable they may be, and theoretically willing to do their duty, yet there are always temptations of some kind to take them off, and as a consequence something is neglected: either the morning's bed occupies too much of that precious time, or some other engrossing occupation throws them back, and then some part of the work must be omitted which, with a distribution of hours already fully occupied, prevents them from making up the time lost, and as a consequence confusion ensues. But with an overlooking eye, these little lapses are not so likely to occur; and then a page will often make a household appear very comfortable, and indeed really feel so.

SECT. 4.—WAGES AND MAINTENANCE OF IN-DOOR MEN-SERVANTS.

521. THE BUTLER in a nobleman's family receives a very high salary, in proportion to his responsibility, and to his knowledge of his duties, including such an acquaintance with the wine trade as would fit him to conduct the business of a wine merchant. But in such families as are provided for by the expenditure in housekeeping of £1000 a-year, from £30 to £45 will be about the wages paid. When a general servant in livery is kept, he will usually receive from £15 to £25, with one or two suits of livery per year, amounting in cost to £7 or £12 more. The page will receive wages differing widely in amount, from nothing to £8 or £10 per year, and one or two suits of clothes, costing about £3 per suit.

522. BOARD-WAGES vary from 12s. to 14s. per week. If beer is not included in the board, 2s. per week is the sum usually paid to each man-servant.

523. THE COST OF BOARDING in-door male servants will vary from £30 a-year to £18 or £20, according to the age and diet. Many men-servants require meat three times a day, and a liberal supply of beer; but to young men and boys a meat *dinner* only is given, with bread and cheese for breakfast and supper.

CHAP. III.

FEMALE SERVANTS.

SECT. 1.—THE LADY'S-MAID.

524. THE LADY'S-MAID AND THE YOUNG LADY'S-MAID are only two varieties of the same species, both being employed solely in waiting upon the ladies of the family in which they are domiciled; but the former being in the service of the mistress, while the latter has the care of one or more young ladies. The lady's-maid is therefore considered a more responsible office, and being in constant communication with the feminine head of the house, she is looked upon with some degree of respect. Her duties are to assist in her mistress' toilet, brush her hair, &c., whenever she changes her attire, and in fact to make herself generally useful to her mistress in the dressing-room. She ought to be an adept at the arrangement of dress, both in regard to material and colour, without which she herself cannot either select what is becoming, or judge of the effect when the selection has been made by others. She has nothing to do, in the usual way, with the furniture of the room or the cleaning of it, which duties are part of the regular routine of the housemaid; but in some families the dressing-room is entirely arranged by the lady's-maid, with the exception of the grate, which is always cleaned and the fire lighted by the housemaid. Dressmaking, getting up fine linen, millinery, and mending are also part of the duties of this servant, which will be found severally treated of under their respective heads. The young lady's-maid is especially useful in these last occupations; and in large families she is kept constantly employed in keeping the young ladies' wardrobes in a proper state, without being able to do much more in the way of aiding their toilets than to superintend them, which at their age is all they require.

SECT. 2.—THE HOUSEMAID.

525. THE HOUSEMAID is chiefly occupied in cleaning, except in those establishments where her only fellow-servant is a cook, in which she is expected to wait at table, and answer the bells, both of the front-door and those of the family. She begins her duties by cleaning out the grates of the sitting-rooms, having first laid down a canvas cloth to prevent any soiling of the carpet or rug; the grate is then cleaned, and the fire lighted, if in the winter, and afterwards the carpet and furniture brushed or rubbed and dusted—being then put in their proper places. When this is done her breakfast is taken, by which time the bedrooms are vacated, and she can enter them to open the windows, remove the slops, and open the bed-clothes. After this she either re-makes the beds or, on certains days, she cleans the grates, washes the floors, or sweeps the carpets—all which will be found treated on at greater length under the various heads of "Cleaning." The stairs are swept down after the bedrooms, and then the housemaid is ready for any other work which she may have to do, depending upon the nature of the establishment. If a general man-servant or page is kept, she will have to wash up the tea-things and glass; but in superior establishments this is done by the footman. Again, when no male servant is kept, the housemaid has the care of the silver, and sometimes even cleans the knives and forks and boots and shoes, though these are generally part of the duties of the cook. The waiting at table also falls to the lot of the housemaid, where no male is kept, so that after her cleaning duties are performed she will find her hands full till evening, when she has to re-enter the bedrooms and remove what slops have been made, turn down the bed-clothes and arrange the curtains both of the beds and windows. Besides these duties, the housemaid has also to attend to the clothes as they come from the wash, to mend them, and to air them when required for use.

SECT. 3.—THE COOK.

526. THE KITCHEN DUTIES OF THE COOK will fall more properly under the head of Cookery, but beyond this in small establishments the work is so divided that the cook often takes a small part of the housemaid's duties, assisting her in making the beds, and often cleaning and taking charge of one or two sitting-rooms and the entrance-hall. Besides this, she is mistress of the kitchen, and arranges all the meals as she pleases. She has to clean all her kitchen utensils, wash up the dinner-plates and dishes, and warm them ready for use. When neither a man nor a boy is kept, the cook cleans the knives and forks, and sometimes the boots and shoes; but all these modifications of the regular allotment of duties depend so much upon the ever varying circumstances of each case, that no rule can be laid down. The first thing for the cook to do is to light her fire, she then gets ready the kitchen breakfast, after partaking of which she may either at once prepare for the family breakfast, or else she begins some other work, according to her usual routine. After

breakfast she receives her orders from her mistress, and, if necessary, goes out to market; on returning from which the kitchen dinner must be prepared, and sometimes, at the same time, the family lunch. After this comes the cooking for dinner, and then the washing up, which, with the kitchen tea, concludes her labours, and she may then generally find some little time for her own work.

SECT. 4.—THE MAID-OF-ALL-WORK.

527. As this servant is the general drudge, she must be prepared to do everything in order, and yet to be ready at a minute's notice to do anything else that is wanted by any member of the family. Such is the usual course of proceeding, but in those families where a maid-of-all-work is kept with anything like comfort, it is usual to avoid interfering with her regular work, by which much time is saved as well as temper. It is only by great forecast and method that any servant can get through all the various duties of a house without destroying her own health or the comfort of the establishment; but with a possession of this happy faculty, joined to great quickness and aptitude, and some thought and consideration on the part of the family, it is possible, as I can testify from personal observation, to perform the task with satisfaction to all parties. Bed-making, where feather-beds are used, can scarcely be effected properly by one pair of hands, and therefore the younger members of the family often aid in the process, and sometimes also in making puddings and pastry; but beyond this, the clever maid-of-all-work can manage to do all that is necessary; the waiting at table being, however, merely an apology for what is really a task fitted for more than one person who has nothing to do with the cooking department. But in spite of all that can be done to lighten the labour, it is a most onerous place, and it is generally only taken as a stepping-stone to "future greatness." In youth a constant habit of working is to be encouraged, and will do good rather than harm for some years together; but in later years the health will not bear this perpetual whirl, and then the maid-of-all-work subsides into the portly cook or the tidy housemaid, according to her tastes and her fitness for either position. When a servant continues as maid-of-all-work through life, it is either from inaptitude or from her slovenly appearance or manners, or because from her bad temper she cannot agree with a fellow-servant and prefers her own company to any other.

SECT. 5.—WAGES AND MAINTENANCE OF FEMALE SERVANTS.

528. LADY'S-MAIDS generally have from 18 to 25 guineas a year; young lady's-maids, 12 to 18 guineas; housemaids, 10 to 16 guineas; cooks, 10 to 24 guineas; and maids-of-all-work, from 4 to 10 guineas. These sums sometimes include tea and sugar and washing; but if not, these are either found by the mistress or she gives two guineas extra for the tea and sugar and one guinea for washing.

529. BOARD-WAGES of female servants are usually reckoned at 10s. per week, including beer.

530. THE MAINTENANCE of female servants will seldom cost more than £20 to £25 a year, and often not so much, depending on the number of the family and the appetite and habits of the individual. Some servants appear to live on air, but these are rare exceptions; the general run will average about what I have fixed as the ordinary cost—in such families as those which are here included. The maid-of-all-work is generally supposed to live on little more than the leavings of the table, but in bread alone she must still make a considerable difference.

CHAP. IV.

HIRING AND DISCHARGING SERVANTS.

Sect. 1.—Hiring Servants.

531. Two kinds of domestic servants are recognized by the law, viz., *menials*, or such adult servants as live within the household of a master; and *apprentices*, whose services are regulated by deed of indenture, and who are generally bound by the parish officers.

532. If in the Hiring of a Menial Servant there is no particular time named, the law interprets the hiring to be for a year; in which case a month's warning must be given by either side prior to the termination of the contract, and commencing at any time. If such warning is not given, and the master discharges his servant, a month's wages must be given in lieu thereof. If a female servant marry before the expiration of her notice, she must nevertheless serve out her term, if insisted on by the master, and her husband has no power to take her away.

Sect. 2.—Discharging Servants.

533. A Domestic Servant may be discharged without notice for incontinence or moral turpitude. So, also, if a servant be taken into custody for any offence, and legally detained from his master's service, the master is authorized in discharging him on payment of such wages only as are actually due; but if the offence for which the servant is charged was committed before the time of hiring, an order from a justice is deemed necessary to warrant his discharge. Any gross misconduct or dereliction of duty, as sleeping from home all night without leave, or wilfully absenting himself when he knew he would be wanted, authorizes the dismissal of a servant without warning.

Sect. 3.—Parish Apprentices.

534. Churchwardens and Overseers, with the consent of two justices, may bind or apprentice the children of the poor; and if any refuse to accept such poor apprentice, they shall forfeit £10. 5 Eliz., c. 4.

535. Disputes between masters and apprentices may be heard before the justices, or the sessions; and the latter may quash the indentures, on default of either master or apprentice. If a parish apprentice is discharged on account of the misconduct of the master, the justices may order the master to deliver up the clothes, and to pay a sum, not exceeding £10, to place him with another master. 32 Geo. III., c. 57. A parish apprentice cannot be transferred to another, or dismissed, without the consent of two justices, under a penalty of £10. 56 Geo. III., c. 139, ss. 9, 10. An apprentice leaving his master's service must serve beyond the term for the time he has been absent, if he be ordered to do so within seven years from the expiration of the term. If a master give an apprentice licence to leave, he cannot afterwards recall it.

536. A Master may Correct and chastise his apprentice for neglect or misbehaviour, provided it be done with moderation; but his mistress is not entitled to the same power.

537. Apprentices Misbehaving or Absconding, may be committed to the house of correction, for any period not exceeding three months.

Sect. 4.—Characters.

538. A Master is not bound to give a servant a character; but if he do give a character, he must take care to give a true one; though, if the character be given without malice, and to the best of his knowledge, no action lies.

539. A False Personation of a master or mistress in order to give a servant a character, or the knowingly giving or writing a false character of a servant, or a false account of a former service, or the bringing a false character by a servant, or the alteration of a certificate of character, occasion the offender to forfeit, upon conviction, £20, with 10s. costs. 32 Geo. III., c. 56.

540. A Representation in Writing, signed by the party to be charged therewith, is necessary in order to render any such party liable for any report or opinion on the character, conduct, credit or ability of another, whereby he may obtain credit, money, or goods.

Sect. 5.—Liability of Masters and Servants.

541. Masters are liable, as a general rule, for the acts of their servants, done in course of business, by their command expressed or implied. A wife, friend, or relation that usually transact business for a man are so far his servants, and the principal must answer for their conduct.

542. Any Trespass committed by a servant under the orders of his master is capable of being laid to the charge of the master, though the servant is not exonerated thereby, since he is only to obey his master's *lawful* commands. If an innkeeper's servant rob his guests, the master

is liable and must make restitution. So if money is paid to a banker's servant, the banker is answerable for it; but if paid to a clergyman's or physician's servant, whose usual business is not to receive money for his master, and he embezzle it, it must be paid over again. If a steward lease a farm without the owner's knowledge, the latter must stand to the bargain, for this is the steward's usual business.

543. TRADESMEN can recover for goods supplied to a servant upon trust, if the master usually sends him on that errand, or even if he only occasionally does so; for the tradesman cannot possibly distinguish between his coming by his master's order and his coming upon his own authority. But if the master deals in the ordinary way with a tradesman by himself, or constantly pays him ready money, he is not answerable for what his servant buys on trust; for here there is no implied order to trust the servant.

544. A MASTER IS LIABLE FOR THE NEGLIGENCE of his servant; as, if a smith's servant lame a horse while shoeing him, or if a tavern-waiter sell bad wine, by which a person's health suffers, an action lies against the master and not against the servant. A master also is liable if any of his family or a servant lay or cast anything into the street or highway, to the injury of an individual, or to the common nuisance of the public; for the master has the superintendence and charge of his household. But when the act of the servant is *wilful*, the master is not responsible, unless the act is done by his command or with his assent.

545. SERVANTS ARE ANSWERABLE for gross carelessness or wilful neglect, and are bound to discharge their duties with care, diligence, and fidelity; but they are not answerable for any loss or injury which may unavoidably happen in the course of their avocations. The practice of some masters and mistresses of deducting from servants' wages the value of articles accidentally lost, broken, or injured is illegal, and cannot be defended, unless it was expressly stipulated at the time of hiring that the servants should be liable to make good such damages.

SECT. 6.—SICKNESS.

546. MEDICAL ATTENDANCE.—An apprentice is entitled to have medical attendance and medicine provided for him by his master; but menial servants, or servants in husbandry, are not, even though their illness may have arisen from accidents in the master's service. If, however, a servant falls ill, and his master sends for a doctor, the master must pay, nor can he deduct the amount from his servant's wages.

547. If a servant hired for a year happen within the time to fall sick, or be hurt or disabled, in the service of his master, the master cannot put him away, or abate any part of his wages for that time.

SECT. 7.—PROPERTY IN LIVERIES.

548. LIVERIES, or other clothes, supplied to the servant at the master's expense, continue the property of the master; and although worn by the servant, they cannot be taken away or otherwise disposed of without the consent of the master.

SECT. 8.—ACTION FOR LOSS OF SERVICE.

549. A master may bring an action against another for beating or maiming his servant, assigning as a ground for the action a loss of service; or he may justify an assault in his defence; as, also, may a servant in defence of his master. So, also, a master may maintain an action against any person for seducing or enticing his servant away, as well as against the servant for unjustifiably quitting his service. It is said that when without enticement a servant quits his service without just cause, an action will lie against any person retaining him *with a knowledge of the manner in which he left his master.*

CHAP. V.

CLEANING.

Sect. 1.—Articles of Clothing.

550. **Boots and Shoes** are first to be cleared of their rough dirt by means of a piece of soft wood (not a knife, which is apt to cut the leather); they are then brushed quite free from dirt with the dirt-brush. After this some blacking is placed upon the blacking-brush, and this is rapidly rubbed over the whole surface to be polished, following it up quickly by the polishing-brush, which must be used lightly and rapidly, so as to avoid allowing the blacking to dry before it is submitted to the action of the brush. If shoes or boots are to be highly polished, they must have a tree placed within them, so as to afford a firm resistance to the brush; and the blacking must be applied in small quantities, again and again, with the polishing-brush used in the intervals as quickly as possible, and, when a tree is used, with a brush in each hand.

551. **Patent Leather, or Enamelled Leather,** requires only a little clean water and a sponge to remove the dirt. When, however, the latter kind is much subjected to the action of the weather and dirt, as in hunting-boots, a liquid sold for the purpose of restoring the polish is used, and succeeds very well. It is brushed on with a painter's brush, and requires no polishing.

552. **Ladies' Kid Boots** are cleaned by sponging them with a moistened sponge, and then occasionally applying a little ink in very small quantities at a time; or use the ladies' blacking, par. 558.

553. **Boot-tops** are worn either of a white or brown colour, according to the taste of the wearer. One or other of the following receipts will serve the purpose of cleaning them. After the top is cleaned, a piece of paper is slipped under, and then turned back over the top, so as completely to protect it from being soiled in the process of blacking.

Receipts for Cleaning Boot-tops.

No. 1.—White.

Oxalic acid, 1 oz.
Finely-powdered pumice-stone, 2 oz.
Mix.

No. 2.—Pale Brown.

Sour milk, 3 pints.
Muriatic acid, 2 oz.
Sulphuric acid, 2 oz.
Compound tincture of lavender, 1 oz.
Mix.

No. 3.—Cream-coloured.

Sour milk, 3 pints.
Butter of antimony, 2 oz.
Cream of tartar, 2 oz.
Citric acid, 1 oz.
Alum, 2 oz. Mix.

No. 4.—Deep Reddish-brown.

Sour milk, 3 pints.
Sulphuric acid, 2 oz.
Compound tincture of lavender, 4 oz.
Gum arabic, 1 oz.
Lemon juice, 2 oz.
white of two eggs. Mix.

The White Tops require to be scrubbed well with the pumice-stone and oxalic acid, using a hard brush; then sponge with cold water smoothly in one direction round the top, and allow it to dry before the fire or in the sun.

Brown Tops are not to be scrubbed with a brush; but the mixture is to be laid on with a sponge, rubbing it in till all the stains are removed; after which the liquid is to be sponged off with clean water, and then either at once dried, or, if required to be polished, the top must be well rubbed with a dry flannel till the full effect is produced.

554. **The Following Receipts for Blacking** will be found useful:—

Fine Blacking for Shoes.—Take four ounces of ivory-black, three ounces of the coarsest sugar, a table-spoonful of sweet oil, and a pint of small beer; mix them gradually.

Good Blacking.—Mix gradually four ounces of ivory-black, four ounces of treacle, one drachm of gum arabic, and the same of green copperas (both the last being previously dissolved in a little water), one table-spoonful of spermaceti oil and a pint and a half of stale beer. After all have been mixed, stir in one ounce of oil of vitriol.

Another Blacking.—Mix together a pound of each of ivory-black and treacle, and a quarter of a pound of olive oil; rub till the oil is perfectly blended, then add a quarter of a pound of oil of vitriol, diluted with three-quarters of a pound of water. Let them stand together for three hours, then reduce it to a proper liquid consistence with sour beer.

To Make fine Blacking.—For this take one quart of sour beer, or porter (the latter is best); eight ounces of ivory-black; three ounces of molasses; one ounce of powdered sugar-candy, or of loaf-sugar; half an ounce of powdered gum arabic; half an ounce of oil of vitriol; and an ounce of sweet oil. Having warmed the beer, dissolve in it the gum arabic, mix the molasses with the vitriol and sweet oil (the vitriol is to give the polishing quality, and the oil is to prevent the vitriol from injuring the leather), add by degrees the ivory-black, rubbing the mixture smoothly together, and seeing that no lumps are left in it; then pour all the ingredients into a jar, stir them hard, and let the mixture stand three days, stirring it with a round stick three or four times a day. It will be then fit for use. If you find it too thick (so that it will not be sufficiently liquid even when warmed at the fire), add a little more beer. Put it into bottles, and cork it tightly.

Blacking that will Preserve the Leather.—Mix together four ounces of spermaceti oil and twelve ounces of molasses. Add by degrees twelve ounces of ivory-black, mixing it in smoothly, and rubbing it well, so as to leave no lumps; then dilute it gradually with a quart of the best white wine vinegar. If too thick, add more vinegar; stir it hard, and let it stand in the jar three days, stirring it frequently with a round stick; then bottle for use. If still too thick, even when warmed at the fire, dilute it by stirring in a little more vinegar.

Ladies' Blacking.—Take four ounces of glue, one ounce of soft soap, half a pound of log-wood shavings, a quarter of an ounce of isinglass and one drachm of indigo. Simmer these over the fire in a quart of vinegar till half reduced. Apply this blacking to the leather, which must be previously brushed, with a sponge.

French Polish for Boots and Shoes.—Dissolve a cake of white wax in as much turpentine as will make it into a paste. It must stand twenty-four hours before it will be perfectly dissolved. Then mix with it as much finely powdered animal charcoal as will make the mixture a fine deep black. Brush it over the leather, and when the turpentine evaporates, a beautiful varnish will be formed on the leather.

555. **Woollen Cloths** are cleaned and renovated by removing the greasy stains with spirits of turpentine, and then getting rid of all remains of that by means of soap and water, and a nail-brush. After this, some small beer should be sponged over the whole surface of the cloth, and then a moderately hot iron should be passed over it lightly, taking care not to use it at too high a temperature. If this is not attended to, the surface will appear too shiny, and it will also be unequally so, but by trying the iron on some part out of sight, the proper state may readily be detected and seized upon.

556. **Paint, Wax, and Tallow** are all removed by spirits of turpentine, using it on a piece of woollen cloth. and afterwards getting rid of the turpentine by continuing the friction with a clean piece of cloth, or, if necessary, follow it up by soap and water, or spirits of wine. When paint is suffered to get hard and dry, it is very difficult to get rid of entirely, but by perseverance with the above solvent it may generally be removed. When the wax or tallow is abundant in quantity, a hot iron should be held *near* the cloth till the wax melts, then scrape it off, lay a clean piece of blotting paper over the place, and press it with a cooler iron till it has taken up as much as possible, after which proceed as above.

557. **To take Stains of any Kind out of Linen.—Stains Caused by Acids.**—Wet the part and lay on it some oxalate of potash, called salt of sorrel, or essential salt of lemons; rub it without diluting it with more water, and then wash it out.—*Or*, Let the cloth imbibe a little water without dipping, and hold the part over a lighted match at a due distance. The spots will be removed by the sulphurous acid gas, but this to a certain extent injures the fabric.—*Or*, Tie up in the stained part some pearl-ash; then scrape some soap into cold soft water to make a lather, and boil the linen till the stain disappears.

Stains of Wine, Fruit, &c., after they have been long in the Linen.—Rub the part on each side with yellow soap; then lay on a mixture of starch in cold water very thick; rub it well in, and expose the linen to the sun and air till the stain comes out. If not removed in three or four days, rub the first off, and renew the process. When dry, sprinkle it with a little water.

Many Other Stains may be taken out by dipping the linen in sour butter-milk, and drying in a hot sun. Then wash it in cold water, and dry it, two or three times a day.

Iron-moulds should be wetted, then laid on a hot-water plate. and a little essential salt of lemons, or oxalic acid, put on the part. If the linen becomes dry, wet it and renew the process; observing that the plate is kept boiling hot. Much of the powder sold under the name of salt of lemons is a spurious preparation, and therefore it is necessary to dip the linen in a good deal of water, and wash it as soon as the stain is removed, to prevent the part from being worn into holes by the acid.

558. **To Take Out Mildew.**—Mix soft soap with starch powdered, half as much salt, and the juice of a lemon; lay it on both sides of the part with a painter's brush. Let it lie on the grass day and night till the stain comes out.

559. **To Make Flannels keep their Colour, and not Shrink.**—Put them into

a pail, and pour boiling water on them, letting them lie till cold; the first time of washing.

560. To Preserve Furs and Woollen from Moths.—Let the former be occasionally combed while in use, and the latter be brushed and shaken. When not wanted, dry them first, let them be cool, then mix among them bitter apples from the druggist's, in small muslin bags, sewing them in several folds of linen, carefully turned in at the edges, and kept from damp.—*Or*, camphor may be used in the same way. Pepper also will have the same effect.

561. To Remove Grease-spots from Silk. To two ounces of spirits of wine add one ounce of French chalk and five ounces of pipe-clay, both finely powdered. Make up the mixture into a paste, roll it into pipes, and let it dry. Apply it by rubbing it on the spot of grease, slightly moistened, and then brushing it off, till the grease is absorbed.

562. To Clean White Satin Shoes.—Rub them the lengthways of the satin with a piece of new white flannel, dipped in spirits of wine. If slightly soiled, you may clean them by rubbing with stale bread. White satin shoes should be kept in blue paper closely wrapped with coarse brown paper outside.

563. To Clean Gold Lace.—Burn some rock alum; then powder it very fine and sift it. Dip a clean soft brush into the powdered alum, and rub the gold lace with it. Afterwards wipe it with a clean soft flannel. Gold embroidery may be brightened in the same manner.

564. To Clean Ermine, or White Furs.—Dust the furs well with a soft flannel, then rub into them with the flannel fine wheat flour, shake out the flour, and rub with a clean flannel till you have removed it all; rub the fur always against the grain.

565. To Keep Silk.—Silk articles should not be kept folded in white paper, as the chloride of lime used in bleaching the paper will probably impair the colour of the silk. Brown or blue paper is better; the yellowish smooth India paper is best of all.

566. To Raise the Crushed Pile of Velvet.—Hold the reverse side of the velvet over a basin of boiling water, and the pile of the velvet will be gradually raised.

567. To Clean White Feathers.—Draw the feathers gently through a warm soap lather several times, then pass them through tepid, and finally through cold water to rinse them. Then hold them a short distance from the fire, and curl the separate parts of the feather as they dry by holding a steel knitting-pin in the hand, and drawing each portion of the feather briskly between the pin and the thumb.

568. To Remove Ink-spots from White Clothes.—This must be done before the clothes are washed. Pick some tallow from the bottom of a clean mould candle, rub it hard on the ink-spots, and leave it sticking there in bits till next day, or longer. Then let the article be washed and boiled; and, if it is merely common ink, the stain will entirely disappear. Of course, this remedy can only be used *for* white things, as coloured clothes cannot be boiled without entirely fading them. The tallow must be rubbed on cold.—*Or*, a most effective preparation for removing ink-spots may be made by the following receipt:—An ounce each of sal-ammoniac and salt of tartar, well mixed, must be put into a quart-bottle, a pint of cold soft water added to them, and the whole well shaken for a quarter of an hour. The bottle may be then filled with water, shaken a little longer, and corked. Wet the marked linen effectually with this mixture, and repeat the process till the stain disappears.

Sect. 2.—Knives and Forks.

569. To Clean the Blades of Knives, they should be dipped in hot water and wiped immediately, taking care that the handles are not wetted; they should then be cleaned on the knife-board or by Kent's knife-cleaner; this last method is much the quickest, but requires care on the part of the servant, for if the knives are pushed in too far the machine wears out the shoulder and blunts the edge of the knife; to save which, care also must be taken to place the blades so that the brushes will rub them from back to front. To preserve knives not in common use, the *blades* should either be rubbed over with mutton suet or kept in a wooden box containing sifted quicklime, care being taken that only the blades of the knives shall touch the lime. Steel forks should be washed and dried, and then passed lightly over the knife-board; the prongs are cleaned by rubbing between them with a piece of stick, wound round with leather and then charged with the brick-dust. The *brick* used is made and sold for the purpose, and is rubbed upon a deal-board so as to leave a small quantity spread upon its surface; after which the knives are passed backwards and forwards with a smart action of the hand, one being taken in each hand by expert servants and the backs of the knives looking towards one another. A powder is sold with Kent's knife-cleaner, which is a beautiful polisher of steel, and it is used according to the printed direction sold with the machine. Two forms are sold, one with a high stand for large sizes, the other smaller for the table.

570. **LIST OF PRICES OF KENT'S KNIFE-CLEANER**, and also the number of knives each machine will clean at a time:—

1st size, 9 table or dessert knives and 1 carver	£14	14	0
2nd size, 8 ditto ditto ...	12	12	0
3rd size, 7 ditto ditto ...	10	10	0
4th size, 6 ditto ditto ...	9	0	0
5th size, 5 ditto ditto ...	7	10	0
6th size, 4 ditto ditto ...	6	0	0
7th size, 4 ditto ditto ...	4	15	0

The whole of the above sizes, except the seventh, are on frames of a suitable height to stand on the floor; but may be had on dwarf frames like the seventh, if preferred.

SECT. 3.—PLATE-CLEANING.

571. AN IRISHMAN would probably say, that the first thing in *cleaning* plate is to take care not to make it dirty. No plate-powder or rubbing will remove scratches, caused by the careless mixture of spoons and forks with the knives after using them. It is therefore of the greatest importance to keep the silver in a tray by itself, and to wash it in soap and water immediately after it has been used, finishing with clean water, and rubbing it dry with a wash-leather. When treated in this way plate requires very little powder of any kind to renew its polish, and it is only for ill-used and scratched silver that the various and much-vaunted plate-powders are required. All those which are composed of chalk in any shape, or ammonia, are innocent, whilst the presence of mercury, as indicated by the slight tinge of a slate-blue colour in the powder, is exceedingly prejudicial. Servants are very fond of these mercurial preparations, because they act quickly, and give a good polish after cleaning; but this soon tarnishes, because a certain portion of the amalgam made with the silver and mercury is left on the surface of the former, and the consequence is that it tarnishes by oxidation on exposure to the air. Gas and sulphurous coals are very apt to blacken silver, the former from not being completely purified from sulphuretted hydrogen, and the latter from causing its presence in large volume; and I have known silver made quite black in a single night by the burning of coals containing sulphur in the room. To remove this deep stain, or that caused by long exposure to the air, requires something more than mere chalk, and the jewellers use an oxide of iron called *rouge*, which is an innocent preparation, being prepared by the precipitation of sulphate of iron by carbonate of potash, and then exposing the dried powder to a high heat. The leathers which are employed are the wash-leathers of the shops, and they should be washed occasionally when they become greasy and blackened with the oxide. When the plate is only slightly soiled, many good managers put it into a large saucepan of soft water, cold, with a lump of whiting and some shavings of yellow soap to make a good lather. They then boil it half an hour, rinse it in cold water, rub with a soft cloth, and afterwards with a plate-leather. This prevents the rubbing off the dead frost-work from the chasing, in removing tarnished spots. The following powders are used by various parties, and any of them will serve the purpose, elbow-grease being needed for all, and, indeed, being the great and important point in all plate-cleaning.

PLATE-POWDER, NO. 1.—Take one pound of the best whiting, or of prepared chalk, and rub it to a fine powder. Then sift it. Mix together four ounces of spirits of turpentine, two ounces of spirits of wine, one ounce of spirits of camphor, and half an ounce of spirits of hartshorn. Then add the whiting gradually to the liquid, stirring in a little at a time, and mixing the whole thoroughly till it is of the consistence of cream: put it into a very close vessel (a large bottle or a white jar), and cork it tightly, tying down a leather over the cork. To use the mixture, first stir it up, then pour out a sufficient portion into a bowl or pan, and with a soft clean sponge cover the silver with it so as to give it a coat like whitewash. Set the silver aside for ten minutes, or more, till the paste has dried into a powder. Then brush it off, and polish first with a buckskin, then with a silk handkerchief. It will be found very convenient to keep this mixture always in the house. It makes the plate look beautiful and new.

PLATE-POWDER, NO. 2.—The most common method of cleaning silver is with pulverized whiting mixed with whisky; or, with spirits of wine, which is better. The whiting must be made as fine as possible; for if there are any coarse or rough particles among it, they will scratch the silver. You may powder it very finely, either by pounding it in a mortar, or by tying it up in a clean rag, laying it down on the hearth, and beating it with a hammer; after which, spread it thinly over a large plate, and place it before the fire to dry. Then sift it through a piece of coarse book-muslin or leno. Mix the whiting into a paste or cream, with whisky or spirits of wine, or with water if the expense of the two first is objected to; dip a flannel or sponge into it, and coat the silver all over with the mixture; after which, lay all the articles in the sun to dry; or place them on an old japanned waiter before the fire, but not very near it. The paste must become so dry on the articles, that you may dust it off them like flour, with a soft cloth. Afterwards, with the smallest brush, rub between the prongs of the forks, and go over all the minute or delicate parts of the silver. The plain or unornamented parts are best rubbed with flannel, as they show the most trifling scratches. Next, polish with a buckskin or a chamois-leather; and finish with a soft silk handkerchief. Before you begin to clean your plate, wash it in boiling water, that no grease or syrup may remain on it.

To Clean German Silver.—Forks of this composition were at one time much in use; and when very good it has a resemblance to genuine silver, and is equally durable. It is by no means costly, and when properly taken care of, and kept bright, it looks very well. After using, it should be put immediately into hot water, washed well, and wiped dry with a soft cloth. Once a week let it be washed in soap-suds, and then cleaned with the plate-powder No. 2, which should afterwards be brushed off. Should this metal become discoloured or spotted by vinegar or other acids, wash it first, and then clean it with sweet oil and powdered rottenstone. If the spoons or forks have become very much soiled and discoloured, you may make a mixture of a quarter of a pint of vinegar, with half an ounce each of alum and cream of tartar; add to this a pint of boiling water, dip the plate into the mixture, and rub it dry.

To Clean Britannia Metal.—Powder, as fine as possible half a pound of lump whiting, and sift it well. Then mix with it a wine-glass of sweet oil and a table-spoonful of soft soap, or a bit of yellow soap melted in a little water. Add to this mixture sufficient rum, whisky, or spirits of wine to make it the consistence of thick cream. Dip into it a soft sponge or flannel, and rub it quickly and evenly on the article; wipe it off with an old linen or cotton cloth, and polish by rubbing it with a buckskin.

Sect. 4.—China and Glass.

572. China and Earthenware may be washed in hot water, with the addition occasionally of a little soap, and the use of a brush for embossed work. They require in this latter case to be rinsed in clean water and dried with a linen cloth. A wooden-bowl or tub should be used for fear of cracking the brittle material.

573. Glass must not be washed in hot water, which would break it; nor in warm water even, because it leaves a dull polish on its surface. Cold water, therefore, is preferred, and if the articles are not more than usually soiled, this fluid alone will suffice, wiping them with a clean linen glass-cloth or a leather, if they are required to be very bright. If glass is stained, a little soda dissolved in the water will remove the stain. For the insides of caraffes or decanters, raw potatoes cut in small pieces and well shaken up in the inside are the best, used in the following manner:—

To Clean Decanters, &c.—Place a funnel in the decanter, and pour through it some raw *unpared* potato cut into little square bits, or some pounded egg-shells, or some fine shot, the first being the best for the purpose. Have ready in a small tub, some strong suds of white soap and cold water, which will be the better for having a little pearlash dissolved in it: or a few drops of muriatic acid mixed with the water will greatly improve the polish of the glass. Take out some of the suds, pour it into the decanter (through the funnel) and shake it about with the cut potato from five to ten minutes, till you see all the impurities disappear from the inside of the glass. Then empty it out, put in some more suds, and wash round the inside with a bit of sponge tied on the end of a stick. It is well to have a regular glass-stick, which should be more than a foot in length, with a flat knob at the end on which to fasten a sponge or a soft rag. After having washed the decanters in the above manner, rinse them out twice with clear cold water. Next put them into the tub of clear soap-suds, and wash them well on the outside with a glass brush (a brush with a broad handle and short bristles), and afterwards rinse the outside in clean water. Dry the inside with a bit of soft *linen* rag fixed to the end of your glass-stick, and wipe the outside with a soft towel, finishing with a silk handkerchief, or a chamois-leather, or a soft buckskin; rubbing well into all the cavities if the glass be cut.

Sect. 5.—The Cleaning of Furniture, Carpets, &c.

574. The several modes of polishing the wooden surfaces of furniture have been detailed at page 165. It remains to allude to the details of cleaning other descriptions of furniture, as *carpets*, *curtains*, *grates*, *fenders*, and *fire-irons*.

575. Scouring Flannels, or Rubbers, should be strong and coarse. If made on purpose, it is well to hem them slightly all round, to prevent their ravelling. Do the same with new dusters, which are better of cotton than of linen, being softer. Short-handled brushes will be wanted for the stairs, for brushing bedsteads, for removing the dust from between the laths of Venetian shutters, and for many other purposes. All

brooms and brushes used for sweeping will last much longer, if when not in use they are hung by a loop of twine or tape passed through a hole drilled for the purpose near the top of the handle. Also, before they are put away, let all the bits of flue, clippings, thread, &c., be picked off them. Scrubbing brushes also will be required, with and without handles; white-wash brushes, stove-brushes, shoe-brushes, and brushes for cleaning the various articles of furniture. These should be kept in suitable places, and those which are used with water should be always washed before they are put away. Let the housemaid be provided with brushes, pails, rubbers, sponges, and whatever is requisite for her work, for her use solely, and make her responsible for their security and proper condition, which it is needful you should, at certain periods, examine into. Also, give her a pair of thick gloves, and a large coarse apron, to use when cleaning her grates, that her clothes may be protected, and that she may readily make herself neat when called for.

576. WATER.—In the morning and evening the housemaid should carry to the bedrooms fresh water to supply what has been used; and where two qualities are supplied, as for instance, soft and hard water, she should fill the ewer with the former, and the water-bottle with the latter, for the use of the mouth.

577. AIRING SHEETS.—It should be the housemaid's business to see the sheets that have come from the laundress perfectly aired, and then to fold them flat in pairs to be placed in a convenient closet or press with shelves, where the sheets can be kept laid one on another, the common and finer sheets on separate shelves, a ticket being attached to each shelf containing the description of the articles it contains, and the number of each which ought to be there. In this closet all extra bedding should be kept, ready for immediate use; if it be in a room where a fire is constantly made, it is a great advantage, as the linen is thus preserved perfectly dry. The sheets which come from the wash should always be placed at the bottom of the pile, and every fresh pair should be taken from the top, that all may be equally worn. The housemaid should carefully examine the sheets before they are sent to the wash, and if the middle appears thin, the sheet should be cut down and the sides joined to form the middle; if they again show decay, they must be cut across and the ends turned to the middle. All sheets that can no longer be used may be converted into glass or tea-cloths, dusters, &c., and the worst pieces may serve for dish-cloths, or to clean candlesticks and lamps. The mistress of the house, or the housemaid, keeps the key of the linen-closet; but it should frequently be left open for a short time to admit the air. In this closet all pieces and remnants of bed furniture, paper-hangings, &c., should be kept, ready when needed for repairs.

578. NEEDLE-WORK.—The housemaid of a small or a quiet family has usually time to do a considerable part of the family needle-work, making and mending the household linen, curtains, &c.

579. INVENTORY.—An inventory of furniture, linen, and china should be kept, and the things examined by it twice a year, or oftener, if there be a change of servants; into each of whose care the articles used by him or her, should be entrusted, with a list, as is always done with plate. Tickets of parchment, with the family-name, numbered, and specifying what bed it belongs to, should be sewed on each feather-bed, bolster, pillow, and blanket.

580. ALL THE HOUSEHOLD LINEN should be marked with the name at full length in marking-ink.

581. WEEKLY CLEANING.—It is the custom in small and large establishments, to make on one day in each week a thorough cleaning of all the rooms. This is a wholesome practice, and should never be discouraged; but it is the duty of the mistress to teach her domestics to conduct this cleaning with such order and quietness that it may not disturb the tranquillity of the household. A neat and orderly housemaid will always have the rooms in such a state that little extra-cleaning will be needed. Nevertheless, it is expedient on this day that the servants should rise an hour earlier, take up all the loose carpets of staircases, passages, and sitting-rooms, and have them well shaken; brush the carpets well that are nailed down, and scour the uncovered boards with soap and water, or first with soda and warm water, afterwards washing them with a large sponge and clean water.

582. IN WASHING OR SCOURING BOARDS, the housemaid must never rub across, but up and down the boards; she must also be careful not to leave the wet soap lying on any mahogany or painted furniture, where it would make a stain; but have a saucer or plate by her to contain it. If there be time before the sitting-rooms are wanted, the mirrors should be cleaned, the furniture and the locks well rubbed, for which operations good receipts are given hereafter. It is usual in families where two maids, or two maids and a boy, are kept for all to assist in the cleaning before breakfast, that it may be speedily completed without creating confusion in the house. Once or twice a year,

when the carpets are taken up, the paint should be well washed with soap and water, and wiped immediately with a dry linen cloth, previously taking great care to remove all the soap by a liberal use of clean water. (See par. 606 and 608.)

583. Dusting Bed-rooms.—It is presumed that the bed-curtains will not need to be removed every week. All curtains ought to be well shaken every day, and frequently brushed between the folds with a hand-brush. To prevent the dust from accumulating on the top or tester, cover it with sheets of cartridge-paper (or very stout brown or newspaper), the edges laid over each other. These will receive the dust which would otherwise lodge and accumulate on the tester, and they can easily be removed, brushed off, and returned to their places. To make those more accessible that cover the middle part of the tester, the edges of several sheets had better be pasted together, so as to form a large square. The bed-clothes must be taken off, folded, laid on two chairs, and covered with a dusting sheet; the feather-bed taken off, and the mattresses, and every part of the bedstead where dust can possibly lodge, should be thoroughly brushed; then the bed must be made, and covered up with a dusting sheet. The carpets must be then taken up and carried away to be shaken; the dressing-glass must be cleaned, and may be placed with its face downwards on the bed, with the pincushion, dressing-case, and other toilet appendages, all underneath the dusting sheet. The washing-stand must next be thoroughly cleaned, the water-bottle, soap-strainer, &c., washed and replaced, and also covered with a dust-cover. The chairs, tables, and the rest of the moveable furniture, should be placed in the middle of the room till the sides near the wall are swept and dusted; the grate and fire-irons, the chairs, &c., all cleaned and restored to their places. Then tea leaves should be strewed under the bed, and also over the middle of the room, the valance being first pinned up, and the whole carefully swept into a dust-shovel. After this is all done, the housemaid must, as usual, draw the curtains, lay out the night clothes, and set the rooms in perfect order.

584. In Cleaning the Staircase, the housemaid must shut all the doors first, then with a long-handled broom dust the walls, and the ceilings if possible, and brush down the banisters with the banister brush. Occasionally, and prior to the sweeping, the carpets must be taken up and the stairs scoured; and it is well to explain to the housemaid at first, that when the carpets are again put down, she must take care the same part does not come to the edge of the stair, to prevent them being worn out too soon. For this purpose, when purchasing stair-carpets, it is usual to get them a yard longer than necessary for each flight of steps; the surplus can be turned up at each end, and the servant will thus be enabled constantly to vary the position of the carpet.

585. In Cleaning the Windows, the frames and glass must be first thoroughly dusted, then three or four panes of glass at a time must be washed with a wetted wash-leather, the corners of the panes being carefully cleaned out. The leather must after this be rinsed and wrung as dry as possible, and the panes that have been wetted must be rubbed dry with it, and then finished with a fresh leather as quickly as can be done. The leather must be washed in clean water and hung to dry after the windows are cleaned. When windows are required to look particularly bright, a little whiting is dusted over them after the first washing with the wet leather.

586. In many families it is customary to take down the chintz window, and even the bed-curtains in the summer; and the housemaid should be directed to shake off the loose dust, then lightly brush with a small long-haired furniture brush; after which wipe them closely with clean flannels, and rub them with dry bread. If properly done, the curtains will look nearly as well as at first, and if the colour be not light, they will not require washing for years. Fold in large parcels, and put carefully by. While the furniture remains up, it should be preserved from the sun and air as much as possible, which injure delicate colours; and the dust may be blown off with bellows. By the above mode curtains may be kept clean, even to use with the linings newly dipped.

587. Blankets.—In summer, the blankets and bedding should be frequently taken into the open air, if the situation of the house permits it, and shaken or beaten. If there be a grass-plot they might be laid out upon it on a sheet for an hour or two in the middle of the day. The best means to preserve blankets from moths is to fold and lay them under the feather-beds that are in use; and they should be shaken occasionally. When soiled, they should be washed, not scoured.

588. Airing.—At all times the housemaid should be charged never to put clean, or even new, linen or blankets upon a bed, without carefully airing, and even *toasting* them before the fire for two or three hours, that no possibility of dampness can occur.

589. Ornamental Drawing-room Furniture requires dusting with a feather-

brush every morning, and once a week a thorough cleaning and rubbing with dusters, or washing, when necessary. The French-polished furniture should be rubbed over every day with a soft cloth, and occasionally, as required, a *very little* of the furniture-cream should be laid on to keep up the extreme polish which is desirable. The carpet must be brushed every morning, before the dusting, and the grate cleaned during the time when fires are used. The following directions apply to the contents of this room, as well as the other sitting-rooms.

590. To Clean Swiss Wood or Biscuit China.—Place your wood-work, &c., under a strong stream from the pump till thoroughly cleansed, and if the wood requires bleaching, place it when dry in a pipkin, large enough to hold the vase. The vessel must have brimstone burned in it, and when well filled with the smoke it is ready to receive the wood-work, which must be shut up in it for two or three hours.

591. Glass-lustres, Ormolu-ornaments, and China-figures, require occasional careful washing with cold soap and water, followed by rinsing in clean water, and drying with a wash-leather.

592. To Clean Looking-glasses.—Remove the fly-stains, and other soils, by a damp rag; then polish with woollen cloth and powder-blue. — *Or*, take a piece of clean sponge, well washed out in water, and dip it into spirits of wine; rub it rapidly over the glass; dust over it powder-blue, or the finest sifted whiting, rub it off with a clean linen cloth, and polish with soft leather, or an old silk handkerchief.

593. To Preserve Gilding, and Clean it.—It is not possible to prevent flies from staining the gilding without covering it; before which, blow off the light dust, and pass a feather or clean brush over it; then with strips of paper cover the frames of the glasses, and do not remove them till the flies are gone. When much soiled, the best remedy is to send them to be gilt anew; as the usual receipts for cleaning gilt frames will be found, on trial, rather injurious than beneficial. Linen takes off the gilding, and deadens its brightness; it should therefore never be used for wiping it. Some means should be used to destroy the flies, as they injure furniture of every kind, and the paper likewise. Bottles hung about with sugar and vinegar, or beer, will attract them; or fly-water put into little shells and placed about the room, but out of the reach of children.

594. To Clean Gilt Lamps, Chandeliers, Candle-branches, &c.—Having first wiped off the dust from the articles to be cleaned, make some strong suds of the finest white soap (palm soap will do) and soft lukewarm water, and, dipping into it a clean sponge, wash carefully every part of the gilding. Then, with a small soft brush (a tooth-brush, for instance), go lightly into all the hollows, crevices, and most delicate parts of the work, with the soap-suds, taking care not to rub hard. When you find that the water has become dirty, replace it with clean suds. Finish by drying the articles with an old silk handkerchief. Unless the servants are unusually careful, do not entrust this work to them, lest they break off some of the minute ornaments, or rub so hard as to deface the gilding. This mode of cleaning will not succeed with the frames of pictures or mirrors. For them there is no safe remedy, when they are soiled and discoloured, but to have them newly gilt. Chandeliers should be dusted at least once a week (or oftener if necessary), with one of those long-handled, soft-headed brushes made for such purposes. Great care is requisite in dusting them, even in this manner, as the drops and other ornaments must be touched with the utmost delicacy. This work, also, must not be entrusted to any but the most careful domestics. Bronzed chandeliers, lamps, &c., should be merely dusted with a feather brush or with a soft cloth. Washing them will take off the bronzing.

595. To Clean Carpets.—The carpet must be taken up, beaten, and shaken, and then put down again. The first step taken should be to remove the grease spots, which must be effected by means of a paste made of boiling water poured on equal quantities of magnesia and fuller's earth; cover all the grease spots with this paste while it is hot, and let it remain till quite dry, then brush it off and the grease will have disappeared.

596. To Renovate Carpets, they must be washed, stretched on the floor, with boiling water in which common yellow soap and soda have been dissolved, in the proportion of an ounce of soap and a drachm of soda to every two gallons of water. The method of washing is for the housemaid to dip a clean flannel into the cleansing liquid, and quickly wash over a certain portion of the carpet; then, before it can dry, dip another flannel into a pail of perfectly clean hot water, and wash the same part over again. She must then proceed to wash another portion, first with the cleansing, and then with the pure water, and go on thus till the whole surface has been cleansed and rinsed in the clean water; not more than a yard square should be washed at once. Then set the windows of the room open, lock the doors, and allow the carpet to be perfectly dried. It should afterwards be again rubbed over with a clean flannel dipped in a strong

solution of ox-gall and water. This process, though certainly tedious, entirely renovates faded and soiled carpets.

597. To Remove fresh Ink from a Carpet.—As soon as the ink has been spilled, take up as much as you can with a spoon, and then pour on cold water repeatedly, still taking up the liquid with the spoon. Next, rub the place with a little wet oxalic acid or salt of sorrel, and wash it off immediately with cold water. Then rub on some hartshorn; or secondly, after taking up all the ink you can with a spoon, wash the part with skim-milk, entirely free from every particle of cream. After removing as much of the ink as possible, sponge again with warm water, wiping it afterwards with a dry cloth. The sooner the ink is washed away the more effectually it may be done.

598. Scouring Balls to take Grease or Fruit Stains from Carpets.—Take fuller's earth, dried and finely powdered; moisten it with lemon-juice; knead it up with a little pure pearlash, and make it into balls for use. The carpets where stained must first be well brushed and rubbed clean, then moistened with water; after which, rub with the ball, dry in the sun, and wash with clean water, using a sponge or cloth.

599. To Dust Carpets and Floors.—Sprinkle tea-leaves on them, then sweep them carefully. The former should not be swept frequently with a whisk brush, as it wears them fast; only once a week, and the other times with leaves and a hair brush. Fine carpets should be gently done with a hair hand-brush (such as is used for clothes), on the knees. Those parts of the carpet that are most soiled may be at any time scrubbed with a small hand-brush, when it is not considered necessary to undertake a general washing of the whole; always adding a little gall to the water to preserve the colours.

600. To Clean Floor-cloths.—Sweep, then wipe them with a flannel; and when all dust and spots are removed, rub with a waxed flannel, and then with a dry plain one; use but little wax, and rub only enough with the latter to give a little smoothness, or it may endanger your falling. Washing now and then with milk after the above sweeping, and dry-rubbing them, gives as beautiful a look, and they are less slippery. An oil-cloth should never be scrubbed with a brush; but, after being first swept, it should be cleaned by washing with a large soft cloth and luke-warm or cold water. On no account use soap, or take water that is *hot*, as either of them will certainly bring off the paint.

601. To Clean Passage-matting.—Straw matting should be washed but seldom, as much dampness injures it. When it is necessary, however, to clean a floor-mat, do it by washing with a large coarse cloth dipped in salt and water; as you proceed, wiping it dry with another coarse cloth. The salt will prevent the matting from turning yellow. If in putting down a floor-mat, you have occasion to join it across, ravel about an inch at the end of each breadth, and tie or knot the lengthwise threads two together. Then, turning all these knotted threads underneath, lay one edge over the other of the pieces to be joined, and tack them down to the floor with a row of very small tacks; each tack having a little bit of buckskin on it, to prevent the head of the nail from injuring or wearing out the mat. This ravelling the ends of the breadths, and knotting and turning under their threads, obviates the inconvenience of a thick conspicuous ridge, if the edge of the matting is folded under in its full substance. Worsted binding is generally used for matting; but as this is sometimes destroyed by moths, it is safer to secure the edge of the mat with a sufficiently durable binding of coloured linen or thick cotton broad tape, to be had of all colours at the carpet-shops.

602. To Wash a Woollen Table-cover. A bright windy day is best for this purpose. Having first taken out all the grease-spots and stains, put the table-cover into a tub with clean suds of white soap and clear water, warm, but not hot (in which have been mixed about two table-spoonfuls of ox-gall), and wash and squeeze it well. Then wash it through a second lather somewhat weaker, of soap, but without any gall in it. Afterwards rinse it through a light lukewarm suds, just tinged with soap. Instead of wringing (which will shrivel it), press out as much of the water as you can with your hands; then fold it up in a tight long fold, and roll and press it hard with both hands on a clean ironing-table, having set a tub to catch the water that drips from it during the process. Roll it always from you, towards the end of the table. When the water ceases to come from it, shake and stretch it well, and dry it as soon as possible, but not by the fire. Go to it frequently while drying and stretch and shake it. While it is yet damp, take it in, spread it on an ironing-sheet, and iron it on the wrong side, pressing it hard.

603. To Take Grease Spots from a Woollen Cover.—Make into a paste three ounces of powdered French chalk, five ounces of pipe-clay, and three ounces of spirits of wine; mould the paste into rolls, and keep them for use. To remove the spot, damp it, and rub on the end of the

roll till you cover the grease; let it remain a short time to absorb the grease, then brush it off. If not sufficient, repeat the application. To remove the stains, use hartshorn diluted with water.

604. To Take Ink out of a Coloured Table-cover.—For a large ink-stain, dissolve a tea-spoonful of oxalic acid in a tea-cup of hot water. Pour it into a bowl, and dip into it the part that is stained by the ink; rubbing it well in the solution. If the ink does not come out well, mix some fresh oxalic acid and hot water, and add it to the first. Rub the stain a little longer; when the ink has all come out, dip the part immediately in warm water, but not hot. Rub it well in the water, to get the oxalic acid entirely out; for if allowed to remain in, it will corrode the article. Then wash the table-cover, directly, in the manner described in a former receipt. If these directions are carefully followed, the ink will be extracted, and the colours of the table-cloth not in the least disturbed.

605. To Clean Curtains.—This should always be done before they are put away for the summer. Having taken down the curtains, and shaken them well, brush them with a small long-haired brush, so as to get off all the dust, particularly from between the gathers, plaits, or flutings. To do this conveniently, the different parts of the curtains should be separated. Prepare a sufficient quantity of good wheat bran; put it into a large pan, and place it before the fire to dry; stirring it frequently with your hands while drying. Afterwards, if the curtains are of silk, mix with the bran an ounce or more of finely powdered indigo-blue. Having provided several pieces of clean soft flannel, spread the curtains (a piece at a time) on a large table, and sprinkle them with the bran, a handful at a time. Next, take a bit of the flannel, and with it rub the bran round and round on the curtains, letting it rest awhile before you brush it off. As you proceed, take clean bran and a fresh piece of flannel, and continue till you have gone sufficiently over the curtains, which by this process will be much brightened and improved in appearance. Then fold them lightly and smoothly; and if they are of merino, worsted damask, or cloth, lay among them numerous bits of camphor to preserve them from moths, and pin or sew them up closely.

Sect. 6.—Cleaning Floors, Paint, &c.

606. To Clean Paint.—Never use a cloth, but take off the dust with a little long-haired brush, after blowing off the loose part with the bellows. With care, paint will look well for a length of time. When soiled, dip a sponge or a bit of flannel into soda and water, wash it off quickly, and dry immediately, or the strength of the soda will eat off the colour. When wainscot requires scouring, it should be done from the top downwards, and the soda be prevented from running on the unclean part as much as possible, or marks will be made which will appear after the whole is finished. One person should dry with old linen as fast as the other has scoured off the dirt and washed the soda off.

607. To Clean Paper-hangings.—All the dust must first be blown from the walls with the bellows. Then divide a loaf of very stale white bread into eight pieces; take the crust in your hand, and, beginning at the top of the paper, wipe it downwards in the lightest manner with the crumb. Do not cross nor go upwards. The dirt of the paper and the crumbs will fall together. Observe, you must not wipe above half a yard at a stroke, and after doing all the upper part go round again, beginning a little above where you left off. If you do not do it extremely lightly, you will make the dirt adhere to the paper. It will look like new if properly done.

608. To Give the Boards a Beautiful Appearance.—After washing them very nicely clean, with soap and warm water and a brush, wash them with a very large sponge and clean water. Both times, observe to leave no spot untouched; and clean straight up and down, not crossing from board to board; then dry with clean cloths, rubbing hard up and down in the same way. The floors should not be often wetted, but very thoroughly when done; and once a week dry-rubbed with hot sand, and a heavy brush the right way of the boards. The sides of stairs or passages on which are carpets or floor-cloth, should be washed with sponge instead of linen or flannel, and the edges will not be soiled. Different sponges should be kept for the above two uses; and those and the brushes should be well washed when done with, and kept in dry places.

609. To Extract Oil from Boards or Stone.—Make a strong lye of pearl-ashes and soft water, and add as much unslacked lime as it will take up; stir it together, and let it settle a few minutes; bottle it, and stop close; have ready some water to lower it as used, and scour the part with it. If the liquor should lie long on the boards, it will draw out the colour on them; therefore do it with care and expedition.

610. To Give a Fine Gloss to a Wainscot-floor.—If greasy, it must be washed with warm beer; then boil two quarts of strong beer, a bit of bees-wax as large as a walnut, and a large spoonful of sugar;

wet it all over with a large brush, and when dry rub it till bright.

611. To Clean Stone Staircases or Halls.—Set over the fire two quarts of water, add to it two cakes of pipe-clay, two table-spoonfuls of carbonate of lime, with half-a-pint of size, and the same quantity of stone-blue water; let the whole boil. Then wash the stones first with clean water, wipe them dry, and with a flannel rub them lightly over with the mixture and allow them to dry. When quite dry, rub them with a brush and flannel till they look well.

612. To Remove Spots of Paint from Window-panes.—Moisten a little common soda and lay it on the spots, taking care it shall not touch the painted window-frames; in a little time wash it off, when the paint will be loosened.

Sect. 7.—Cleaning Grates, Steel, and Marble.

613. To Clean Steel and Iron.—Make one ounce of soft soap and two ounces of emery powder into a paste, the latter should be composed of equal quantities of coarse and fine emery powder; put this on your steel, and afterwards rub with a dry wash-leather, and it will give a brilliant polish. In the summer, when fires are left off, finish with rotton-stone.

614. A still better Material for bright steel is crocus powder; first use a little moistened with sweet oil, and then rub with a little dry powder on a leather.

615. To Clean Stone Hearths.—Stone hearths should be first washed clean in soap-suds, then rubbed with a paste made of finely powdered sand; when this is dried on, the hearth should be brushed.

616. To Clean Polished-steel Grates.—Nothing is more difficult in a small establishment than to preserve the polish of steel bars, which actually requires more time than a single housemaid can spare from her several avocations. It is then desirable, in the winter season, to be content with black bars and a cheerful fire. In summer the bars may be preserved from rusting by daily rubbing with leather; if rust should appear, it may be removed by using finely powdered emery and rotten stone.

617. To Take Rust out of Steel.—Cover the steel with sweet oil well rubbed on it, and in forty-eight hours use unslacked lime finely powdered, and rub until all the rust disappears.

618. To Varnish Polished Iron.—This may be preserved from rust by going lightly over it with copal varnish, mixed with nearly an equal quantity of spirits of turpentine, and as much sweet oil as will give the mixture a little greasiness. Lay on this mixture with a bristle brush (which must afterwards be washed directly in warm water), and see that no dust or ashes gets to it while drying. The varnish may be obtained from a paint-shop or from a chair-maker's.

619. To Preserve Iron from Rust.—Melt fresh *mutton-suet*, smear over the iron with it while hot; then dust well with unslacked lime pounded, and tied up in a muslin. Iron so prepared will keep many months. Use no oil for them at any time, except salad oil, there being water in all other. Fire-irons should be kept wrapt in baize, in a dry place, when not in use. *Another Way.*—Beat into three pounds of unsalted hogs'-lard, two drams of camphor sliced thin, till it is dissolved; then take as much black lead as will make it of the colour of broken steel. Dip a rag into it, and rub it thickly on the stove, &c., and the steel will never rust, even if wet. When it is to be used, the grease must be washed off with hot water, and the steel dried before polishing.

620. To Preserve Iron, Steel, or Copper from Rust.—To a proportion of four-fifths of rectified spirits of turpentine add one-fifth of oil-varnish; rub the mixture over the metal with a sponge; it will preserve the brilliancy of the metal, and entirely prevent rust.

621. To Clean the Back of the Grate, the Inner Hearth, and the Fronts of Cast-iron Stoves.—Boil about a quarter of a pound of best black lead in a pint of small beer, with a bit of soap the size of a walnut. When that is melted, dip a painter's brush, and wet the grate, having first brushed off all the soot and dust; then take a hard brush, and rub it till of a beautiful brightness.

622. Another way to Clean Cast-iron, and Black Hearths.—Mix together black lead and whites of eggs well beaten; dip in this a painter's brush, and wet the stove all over, then rub it bright with a hard brush. It should be applied when the stove is cold and cleared from all the ashes.

623. To Take the Black off the Bright Bars of a Polished Stove in a few Minutes.—Rub them well with some of the following mixture on a bit of broad cloth; when the dirt is removed, wipe them clean, and polish with glass, not sand-paper. *The mixture.*—Boil slowly one pound of soft soap in two quarts of water, down to one quart. Of this jelly take three or four spoonfuls, and mix to a consistence with emery.

624. To Blacken the Fronts of Stone Chimney-pieces. — Mix oil-varnish with lamp-black, and a little turpentine to thin it

to the consistence of paint. Wash the stone with soap and water very clean; then sponge it with clean water; and when perfectly dry, brush it over twice with this colour, letting it dry between the times. It looks extremely well. The lamp-black must be sifted first.

625. TO CLEAN MARBLE.—Mix pumice-stone very finely powdered into a paste with verjuice; let it stand for two hours; with a sponge rub it over the marble, and allow it to dry on; then wash it off with clean water, and dry it with soft linen.

626. TO CLEAN COLOURED MARBLE.—Black, gray, or variegated marble may be made very clean, by rubbing on it with a brush a paste composed of a gill of ox-gall, a gill of strong soap-suds, and half a gill of turpentine, all mixed together and thickened with finely-powdered pipe-clay. You should have a second brush, small enough to go into the fluting, &c. Having applied this paste to the marble, let it remain undisturbed for two days, then wipe it off; and if you do not find the marble perfectly bright and clean, repeat the mixture a second or a third time, and it will certainly succeed by repetition. The general appearance of a gray marble hearth will be greatly brightened and improved, by rubbing it occasionally with a flannel wet with linseed oil. The oil must be rubbed in very hard, so as not to come off and grease anything that may afterwards touch it. Next day go over it with a clean dry cloth.

627. TO TAKE STAINS OUT OF MARBLE.—Mix unslacked lime, in finest powder, with the strongest soap-lye, pretty thick; and instantly, with a painter's brush, lay it on the whole of the marble. In two months' time wash it off perfectly clean; then have ready a fine thick lather of soft soap, boiled in soft water; dip a brush in it, and scour the marble with powder, not as common cleaning. This will, by very good rubbing, give a beautiful polish. Clear off the soap, and finish with a smooth hard brush till the end be effected. Chloride of lime may be used with advantage, instead of the common quick-lime.

628. TO CLEAN ALABASTER.—Wash it well with some warm water and a clean brush. The slightest stain of soap or grease is sure to spoil it.

SECT. 8.—COPPER AND BRASS ARTICLES.

629. COPPER ARTICLES are cleaned in the same way as brass. For very dirty copper sulphuric acid, commonly called oil of vitriol, is rubbed on, and followed by washing it off with cold water, and then polishing with brick-dust or rotten-stone and turpentine.

630. TO CLEAN BRASS.—Dissolve in a pint of soft water an ounce of oxalic acid, which is poisonous, and should be well taken care of, and always kept in a bottle, labelled "Poison." Always shake it well before using it. Rub it on the brass with a flannel, and then take a dry flannel to polish it. Use this solution twice a week, and next day have ready some pulverized rotten-stone, sifted through a muslin rag, and mixed with oil of turpentine, so as to be liquid. Rub this on with a buckskin, let it rest ten minutes, and wipe it off with a cloth. (Oxalic acid being poisonous, care must be taken that none of the liquid gets into the eyes, when used for rubbing. Should this by any accident happen, immediately get a bowl full to the brim of cold water, and hold the eyes open in it, till the pain abates; repeating it at intervals during the day.)

631. FOR CLEANING BRASSES BELONGING TO MAHOGANY FURNITURE, either powdered whiting or scraped rotten-stone mixed with sweet oil, and rubbed on with a buckskin, is excellent. Let it rest a little while, and then wipe it well off, seeing that none of the mixture lodges in the hollows of the brass. In cleaning brass-handles, hold the handle firmly with one hand, while you clean with the other, otherwise the handles will soon become loosened by the unsteadiness of the friction. Lay underneath an old newspaper, to catch the droppings.

632. TO CLEAN LACQUERED BRASS.—Boil your articles for an hour or two in soft water, then make a strong lather of soap and soft water; let the brass lie in it for two or three days, being frequently taken out and brushed with a hard brush. When dry rub it with a leather or cloth.

633. TO CLEAN BRASS ORNAMENTS, FIRE-IRONS, &C.—Wash with one ounce of alum boiled in a pint of strong lye; when dry, rub over with tripoli powder or rotten-stone.

634. CLEANING STAIR-RODS.—Pulverize some rotten-stone, and when the powder is made very fine, mix it with sweet oil. Then, with a woollen cloth, rub it well on each stair-rod. Polish with a soft buckskin, on which must be rubbed a little *dry* rotten-stone finely powdered. Any other brass may be cleaned to advantage in this manner.

SECT. 9.—TIN ARTICLES, LAMPS, AND CANDLESTICKS.

635. TO CLEAN CANDLESTICKS, &C.—Whether the candlesticks, snuffers, or trays be silver, plated, or japanned, the first care must be to remove the drops of grease by pouring boiling water upon them,

and immediately wiping them with a soft wash-leather. Never place them before the fire to melt the grease, as there is danger of the solder melting, and the joints being cracked. Metal articles will afterwards need polishing with plate-powder, or the following composition.

636. GOOD CHEMICAL PASTE FOR CANDLESTICKS, TINS, CUT GLASS, &c.—One pound of rotten-stone powdered fine, two ounces of soft soap, and half an ounce of oil of amber. Beat the soap into a lather with a little warm water, adding the rest by degrees so as to form a thick paste.

637. OIL LAMPS should once a week, or fortnight, be scalded out with boiling water and pearlash, after which they must be carefully dried before the oil is again poured in. When the moveable working parts become foul, they should be taken out and boiled in the same solution, and then carefully cleaned.

638. BLOCK-TIN DISH-COVERS, &c.—Having washed the block-tin articles quite clean in warm water, rub the inside with soft rags moistened with fine wet whiting. Then take a soft linen cloth, and go over the outside with a little sweet oil. Next rub it all over with fine whiting, powdered and sifted, and put on dry. Afterwards finish with a clean dry cloth. Block-tin dish-covers cleaned in this way with oil and whiting will preserve their polish, and continue to look new, provided that they are always wiped dry as soon as they are brought from table. Block-tin pans and kettles may be cleaned with fine whiting and water, inside and outside; a good servant takes a pride in having her pans clean and bright.

639. TO REMOVE THE TASTE OF RESIN FROM NEW TIN.—Take a hot live coal from a wood fire, or a piece of burning charcoal, put the coal into the tin vessel, and shake it about awhile. Repeat this, if necessary, with a fresh coal each time. Then wash out the vessel with boiling water.—*Or*, boil in the tin some potash dissolved in water; afterwards wash out the vessel, and boil plain water in it.

640. TO CLEAN THE INSIDE OF PANS AND KETTLES.—Fill the pan or kettle with water, and add to it a drachm of sal-ammoniac; let it boil for an hour, when the *fur* or petrified substance formed on the metal will be dissolved, and can easily be removed. In boiling a kettle, care must be taken to put on the lid *closely*, so as not to leave the smallest crevice. If the lid is in the least broken or bent, it is best to get a new one; otherwise the water is liable to be smoked and rendered unfit for use, communicating a most disagreeable taste to the tea.

SECT. 10.—TO DESTROY VERMIN.

641. THE HOUSE-FLY AND THE BLUE-BOTTLE, OR MEAT-FLY, are very troublesome pests; the former from the stain which it leaves, and the latter from depositing its eggs in meat, called fly-blows. Many substances will poison the house-fly, but it is very difficult to effect this without danger to children. Quassia infused in boiling water and sweetened with sugar is a poison to flies, but innocent to human beings. Freshly-dissolved soap in water, made into a lather, and placed in a tumbler covered with paper, having a small hole in the middle, will kill the flies which enter; but it is not a very destructive fly-trap.

642. MOTHS are best destroyed by preventing them from settling in the clothes where they lay their eggs. The moths, themselves, are quite innocent, and it is in their larva or maggot state that they feed upon the woollen fabric. A wonderful instinct implanted in them by nature directs them to avoid all woollen articles but such as are more or less dusty from lying by, and consequently as long as blankets, coats, and furs, are regularly taken out, brushed or shaken, and replaced, they are safe from the female moth's notice, and she will wander further a field in search of more quiet quarters. Camphor or pepper will, to a certain extent, repel their advances; but the above precaution is all that is necessary. No one ever saw a moth settle upon a coat just worn, with a view to lay her eggs, nor upon a carpet in use over which the brush passes daily; but if the same articles are left untouched they will soon become furnished with eggs and larvæ, and then are beyond the reach of anything but a microscopic eye and hand to pick them out of their pasture field.

643. COCK-ROACHES, RATS, AND MICE may best be poisoned with the preparations of phosphorus sold for the purpose.

644. TO DESTROY BUGS.—In new houses, where the habits of the family are neat, and a general attention is paid to cleanliness throughout, there will be little danger of bed-bugs; but on removing to an old house which has had various occupants, these disgusting and intolerable insects frequently make their appearance with the commencement of the warm weather (and sometimes before), from having been unpardonably allowed to get possession even of the crevices of the wood-work on the walls; and if the chambers are papered, they often contrive to effect a lodgment between the edges of the paper and the plastering. In this case the most efficient remedy is to have the paper torn off (first loosening it by

washing it all over with a broom or brush dipped in water), and the walls purified by white-washing or painting. If bugs are found in the crevices of the surbase or skirting-board of an old house, their haunts should be well washed with a strong solution of corrosive sublimate in water, which, however, is exceedingly poisonous, and should only be trusted in the hands of a thoroughly careful servant. A *most effectual* remedy against bugs is to have all the bedsteads in the house taken down every spring (in March, for instance), and after washing the joints with cold water and brown soap, to have the whole bedstead completely varnished (even on the inside of the joints) with copal-varnish; if necessary, getting a cabinet-maker's man to come and do it. The expense will be small in comparison to the benefit. In very bad cases, where the whole room, walls, floors, and ceilings are infested, the only effectual remedy is fumigation. Remove everything from the room that you are satisfied is perfectly free from the vermin, then close every opening, and even every chink and crevice in the room that might admit air; pasting paper over the joints of the doors, &c. Then cut up four ounces of brimstone into an iron pan, light some slips of linen dipped in brimstone, and place them in the pan, leave the room without delay, closing the door and covering even the key-hole. In twenty-four hours, no living creature will resist the fumes; but still the eggs remain, and a fresh fumigation may afterwards be required.

645. Where these insects are very rife, and exist in the crevices of the boards, as well as in the beds, the best plan is to mix up a pound of white arsenic, with two or three pounds of soft soap, and enough water to make a thick paste, then fill all the crevices with it, and afterwards wash the boards lightly over so as to cause the arsenical soap to enter deeply into the chinks. Beds may be treated in the same way, as there is no danger unless the arsenic is left loose above the surface, in which case it might possibly be picked off and eaten by children. But with ordinary caution this method may be adopted in any family, who will be justified in using any means not attended with risk to health or life, in order to get rid of such unclean attendants. A still better remedy is corrosive sublimate in solution brushed into every joint, but it is very poisonous, and therefore should not be lightly used; it is decomposed by any mixture with soap.

CHAP. VI.

WAITING AT TABLE.

646. At breakfast, luncheon, tea, and supper, the servant, whether male or female, after placing everything ready for use on the table, leaves the room, and does not re-enter it until the meal is over, unless summoned by the bell. This practice is intended partly to avoid unnecessary interference with the work or meals of the servants, but in great measure also to insure privacy and sociality at those comfortable meals. In many houses, breakfast lasts for a full hour, and if the servant were mulcted of that time he would add considerably to his day's work; because, though he may really be doing nothing when remaining in the room, still the time goes on during which he might be attending to his regular duties. Even when hot luncheons are the custom of the house, the servant's attendance is dispensed with as soon as all the first wants are attended to, beyond which the members of the family contrive to help themselves or one another, which is no great hardship after all, and fully counterbalanced by the opportunity given for unchecked conversation.

647. WAITING AT DINNER is far the most important matter connected with a manservant's duties, as upon it depends not only the comfort of the heads of the establishment, but also that of their guests. Indeed, an awkward waiter is enough to spoil the best arrangements in all other respects; and, therefore, it is incumbent upon the giver of a dinner to ascertain, as far as possible, that his servant or servants are able to carry out this duty satisfactorily.

648. So much is now done by the servants at even small dinner parties, that it requires a considerable number of them, the lowest proportion being one servant to four guests; and even with this, much more with a smaller number, the latter will often be kept waiting for sauces, condiments, or

vegetables. The fashion now is to put little or nothing upon the table, and never anything beyond the principal and side-dishes, which latter are handed round in succession by the servants, and not served by the guests. All this, therefore, adds to the duties of the waiters, and increases the necessity for a sufficient number.

649. THE GENERAL REQUISITES towards good waiting are—quickness without noise, or apparent bustling; constant watchfulness, without officiousness; and precision in placing dishes on the table, without apparent effort, which is a rare faculty, and dependent upon a natural gift. In the present day, when so many servants are introduced into the dining-room, some kind of drilling is required, so that there shall be no confusion and doubt as to the party charged with each particular office. Either the butler or man-servant of the house takes the management, and has all the others under his orders, or, as is sometimes the case, when a professed waiter attends for the night, the latter takes the control, and is obeyed by all as the superior officer. But, however this may be, unless some one servant is to have the command, it is needless to expect a proper arrangement and attendance. When no male servant is kept, and one or more waiters are hired, one of them always takes the control; and it is far better to let him do so, without any assistance from the housemaid in the room, though she can be of great service in aiding them outside by serving as a communication between them and the kitchen.

650. LAYING THE CLOTH is the first thing done, and though fashion is continually altering the exact details of the arrangement, yet in principle it has remained nearly the same for many years past. Great care is required in opening the table-cloth to avoid tumbling it, and for this purpose it should first be placed lengthwise on the table, opening it only so far as to be still double. The double edge is placed exactly down the middle of the table, and then the upper half is smoothly turned over the still-uncovered portion of the table, and gently smoothed down with the hand, but leaving the folds apparent, and the middle one exactly corresponding with the central line of the table. The knives and forks, spoons, plates, wine-glasses, finger-glasses, caraffes, salt-cellars, centre-ornaments, &c., are then ranged according to the particular fashion of the day, taking care to place them in mathematical order, a departure from which spoils the look of an otherwise well-assorted table. At the same time, or previously, the servants will place what is likely to be wanted on the sideboard and dinner-waggon, which should be covered with folded table-cloths. These receive extra plates and knives and forks, wine-glasses, and sometimes the dessert, though in other cases it is laid in an adjoining room, where it is kept cooler than it would be in the dining-room itself.

651. THE SERVING AT DINNER commences by taking in the first course, after which dinner is announced, and then its several articles, usually consisting of fish and soup, are handed round to each guest in succession, followed by another servant with sauces, &c. Wine is next offered to each by the waiters, during which the dishes are removed, plates changed, &c.; and after the introduction of the successive courses, the individual dishes are handed round to each guest, either by offering the whole if a side-dish, or by taking a slice of it if a principal one. In this way the dinner passes—an incessant change of plates, and knives and forks, with a removal of dishes and rounds of wine, being the duties of the servants, who have their hands kept constantly full in this way.

652. THE DESSERT is placed on the table after the dinner is removed, and requires great care in its arrangement, which should be, like that of the dinner itself, mathematically correct. The head servant then takes round the principal varieties of the wine on the table, and offers them to each guest, followed by ice, peaches, grapes, and any other article of the dessert; and then the servants take their departure, and their duties are over for a time, nothing else remaining for the present but to attend to the bell, and put fresh wine on the table when ordered. The icing of wine, and other similar duties, will be found described in the sections of the next book.

653. COFFEE is generally brought in and handed round at such a period after the rising of the ladies as is considered right by the master of the house, or in some cases as ordered by the mistress.

BOOK V.

THE SUPPLIES OF THE HOUSE.

CHAP. I.

MARKETING AND SHOPPING.

SECT. 1.—GENERAL REMARKS.

654. THE ACT OF SUPPLYING THE HOUSE with food for its inmates, and with fuel for its fires and lights (both being equally necessary to health and comfort), is called marketing, when it is effected by purchase either in shops or in open market. This method is usually adopted in cities and towns, and sometimes in large villages; but in isolated situations it is often more convenient and generally more economical to produce what is wanted, or certain portions only, by carrying on the several processes at home. In the former method, a certain number of individuals are employed, so that by a division of labour an economy of time and *space* may be effected. But in order that marketing may be advantageously carried on, there must be a sufficient population to support special dealers in each article of consumption, or otherwise the charge or price must be so increased as to raise the cost very much above that at which it may be produced at home; for as each seller must support himself out of the profits of his business, it follows that only when the returns are large can he afford to sell at a small profit upon each article, while in those cases where they are limited in amount, he must lay a heavy charge for profit upon every article that he sells. It is in this way that large dealers in markets can sell their meat and other goods at a lower rate than can be afforded by a small tradesman who probably does not dispose of a hundredth part of their daily sales; and who very often is obliged to buy his goods of a wholesale dealer at a price very little below what the retail customer can obtain them at in the same market. To some people time is of the greatest importance, and half an hour spent in reaching a distant market would be poorly paid for by a saving of a penny a pound in the meat, poultry, or fish required by the house. In other instances, the gentleman of the house is positively prevented by business from undertaking this office, and the lady is too young or too timid to trust herself in the busy, and often not very odoriferous, thoroughfares where the butcher and the fishmonger expose their goods. In such cases either a servant must be entrusted with the task, or a neighbouring tradesman must be dealt with; and it is to supply the wants of people so situated that so many small shops are established for the sale of all the requirements of the housekeeper at a minute's notice. But for the above reasons it cannot be expected that they should sell at the same low rate as the large market salesman, and therefore they should either be taken as a convenience, and their goods paid for as such without comparing them with their wholesale competitors, or else they should be avoided altogether. It is very common for people to allege that certain shops are very dear, but let them ask themselves whether they, or their neighbours, lay out enough there to make a low price possible, if a living is to be made. If this question is answered in the negative, it ought not to occasion surprise that a high price is charged for the convenience which is always offered to them, and which they only accept when they cannot afford time to better themselves by searching further a-field. There is never any objection to a careful and economical housekeeper buying in the cheapest market, but there is not the slightest cause for her abusing those who merely offer her goods at the price which they think will remunerate them, without forcing her to accept the offer. The remedy is easy enough, all may choose for themselves, and may buy where and how they can best suit themselves—remembering always that an article apparently cheap, often becomes dear by the time that it reaches its destination. Thus, supposing a person to live at some distance from a market, she may be able to go there and purchase all that she wants at a lower rate than she can at home; but unless she can save more than the value of her lost time, and the cost of sending her marketing home, she will effect nothing towards reducing her expenditure. In general the time is not valued at all, and very often the sending home is not very costly; but I have known gentlemen, as well as ladies, save one shilling only in price and spend two shillings in cab-hire to take the marketings home. Such an event is, however, an extreme instance of mismanagement, and there can be no doubt *that, in general*, a person of ordinary quickness and judgment will be able to save one-fifth or one-sixth of the gross expenditure in the daily supplies of food by searching the markets within her reach.

655 THE METHODS by which marketing is satisfactorily conducted vary a good deal according to the articles to be bought, and

also in accordance with the nature of the market. In London the best markets for each kind of food are very widely separated, and the person who would try to visit them all would find that she would lose more time and money than she could hope to regain by her clever bargains; and not only are the localities wide apart, but the hours for holding the markets are also different, so that it would be scarcely possible to transact business in each department without bestowing a considerable portion of the day upon it. Some markets, also, are so crowded and so full of dirty and greasy dealers at the most busy times, that no lady could hope to escape annoyance, and therefore she is better away. It should be remembered that, for the practice of economy, two separate calculations are required: the first being the best method of *obtaining* the articles necessary for consumption; and the second, that by which those same articles shall be most advantageously *employed*. It is with the former of these, therefore, that we have now to occupy ourselves, considering in this book how best the careful housewife shall obtain her supplies, and in this particular chapter how she shall best *go to market*, either in the open market or in the several shops devoted to each kind of article.

SECT. 2.—BUTCHER'S MEAT.

636. This article of consumption is to be bought in all large towns either in butchers' shops, where it is daily exposed for sale, or in markets where the sale is on stated days, or in some cases, as in the chief London meat-market, every day. In many small towns, and in most villages, meat is only to be bought on a single day in the week; and during the summer season, when it will scarcely keep from day to day, great inconvenience is there experienced. Wherever there is sufficient accommodation for keeping meat, it is better to buy it as soon after it is killed as possible, or at least after it is exposed for sale; for until it is set and cold it is not fit to be moved, nor will the butchers, for their own credit, allow it to be seen or bought.

637. QUALITY OF MEAT.—There is a great variation in the quality of meat brought to market, and consequently in its price, so that the young housekeeper must not fancy that she is always right in purchasing cheap meat, because it is to be had at a penny a pound lower than the price paid by her neighbour. By the returns of all markets there is a difference of about one-fifth, or even a quarter, between the highest and lowest wholesale prices paid, as is evident from the annexed Smithfield and Metropolitan returns, taken at random from the *Times* of this day, June 10th, 1856:—

COMPARATIVE PRICE OF CATTLE IN 1854, 1855, AND 1856.

MONDAY, JUNE 9, 1856.

	s.	d.		s.	d.
Beef	4	2	to	5	2
Mutton	4	4	,,	5	0
Lamb	5	0	,,	6	0
Veal	4	4	,,	5	4
Pork	4	2	,,	5	2

MONDAY, JUNE 11, 1855.

	s.	d.		s.	d.
Beef	4	0	to	4	8
Mutton	4	4	,,	5	0
Lamb	5	4	,,	6	8
Veal	4	0	,,	5	0
Pork	3	10	,,	4	10

MONDAY, JUNE 17, 1854.

	s.	d.		s.	d.
Beef	4	0	to	4	10
Mutton	4	0	,,	5	0
Lamb	5	0	,,	6	0
Veal	4	2	,,	5	2
Pork	3	10	,,	4	6

From this table it is clear that the inferior butcher is enabled to sell to his customers meat one-fifth, on the average, cheaper than the man who deals only in the higher qualities of meat, and hence it is that the markets vary so much. But further than this, a great deal of the difference of price depends upon the demand in any given locality for particular parts. Thus, in the markets and shops frequented by the upper and middling classes only, the best joints are in demand, and the inferior ones meet a comparatively slow sale, the consequence of which is that the butcher is compelled to raise the price of his sirloins of beef and legs of mutton and veal, and to lower those of his necks of beef and mutton, and shoulders of veal. Hence, it will always be found that in poor neighbourhoods, or in markets frequented by the poor, there is less variation in the price of joints than in those shops where the higher classes chiefly deal; and this is necessary for the butcher to make a living, because he is obliged to force a sale of the inferior parts, as well as the highly-prized joints, by averaging the price to suit the wishes of his customers. A small tradesman, or a mechanic with good wages, will not be tempted to choose an inferior joint of meat, unless he can get it at a reduction of three-halfpence or twopence a pound, while the poorer labourer will be only too well pleased if he can muster money sufficient to pay for a joint of meat of any kind, and will consider a penny a pound saved quite sufficient to make him select the one in preference to the other, especially as he is often guided by absolute necessity in his choice. With regard to the quality of the meat, in point of economy, I believe that it is of more consequence than is generally supposed; and no where is this theory more fully carried out than in the cook-shops of London. Here dressed-meat is sold at low prices, yet it is almost always of good quality, not only because it is better relished by the customers, but because *good meat turns out a greater bulk and weight when dressed* than inferior descriptions of the same article. Proprietors of these shops go to great trouble in frequenting the markets, where the dealers say they are very hard to deal with; but they rarely buy foreign, or inferior English, meat; and though they equally avoid the fancy kinds, yet they always take care to select that which is *well-bred*, and consequently containing a small proportion of bone, and *well-fed*, and therefore not given to melt away before the fire or in the pot. Meat with good solid fat, not watery blubber, and with lean containing plenty of fibrine, is what they require, and what the small housekeeper also should look out for, if she can get it. Experience teaches them to make their selection, and such must always be the best guide, but failing that, the accompanying remarks will, perhaps, be of service:—

658. THE QUANTITY OF BONE in a given joint also regulates the price, and very properly so, since this material, though not absolutely worthless, is nearly so as compared with "fat and lean." In buying veal, for instance, the whole leg may always be procured at a penny or three-halfpence a pound less than the fillet, because the latter has no bone at all if sold as a "fillet," in which case the bone is removed by the butcher, whilst the leg contains not only the bone (taken out from part of it to constitute "the fillet"), but it is made up besides of the part called "the knuckle," in which there is a still greater proportion of bone. In a moderate-sized leg of veal, of 20 lbs. weight, the bone altogether weighs about 3½ lbs., which must be deducted from the gross weight before the value of the meat can be arrived at—leaving 16½ lbs. If, therefore, the fillet can be bought for 7d. per lb., the whole leg, which at the same rate is worth 9s. 7½d., calculating only the meat upon it, ought to be bought for 5¾d. per lb., or at a difference of 1¼d.; so that the taking off a penny only is not enough to counterbalance the loss upon the bone, unless its value for making soup is taken into the account, and that will probably bring it to what the butchers generally charge, namely, one penny to three-halfpence per pound more for fillets than whole legs. The same remark applies to necks of mutton, especially if they are bought with all their fat on. In this joint the bones weigh about one-sixth of the whole, varying, however, greatly according to the degree of fatness; and on an average the bones and the fat together will comprise two-thirds, or from that to one-half, of the gross weight. Now, in general, the melted fat, in the shape of dripping, if taken care of, may be considered to be worth as much as the meat, especially in large families where it is used for making various articles for the table, or where it is sold to the dealers in this article, who give quite as much for it as the current price of the best joints of meat; but in small families, or in those where the dripping is not used, and is made a cook's perquisite, the fat as well as the bone is a dead loss. Consequently every neck of mutton is worth only half the value of a joint composed of meat entirely, or nearly half the value of a leg of mutton, of which a very large proportion is solid meat. Sirloins and ribs of beef are equally extravagant, and will go very little more than half as far as the roasting side of the round of beef, or any other solid part, which, though commonly considered coarse, is yet juicy and nutritious, and quite fit for the stomachs of children or for servants' tables—in fact for any one but the *gourmand*. The table in the next page exhibits the proportion of meat to bone in the most ordinary joints of meat, the joint, when raw, being first weighed, and afterwards the bone, when dressed, and its meat removed by the knife. The exact relative proportion of bone to meat is therefore here considerably understated, as, to ensure perfect accuracy, the bone ought to be weighed in a raw state; but this is sufficient for all practical purposes, especially as the object is to compare one joint with another in its proportion of bone. The table also gives the present avarage prices of each joint in the London *markets*, not in the retail butchers' shops.

659. THE PRICE OF MEAT may therefore be said to depend upon the following circumstances:—1st, upon the *quality* of the animal producing it; 2nd, upon the *neighbourhood* where it is sold; 3rd, upon the *joint, as valued by the quality* of the meat upon it; and 4th, upon the *joint, as valued by the absence of bone.*

[illegible]

[illegible]	[illegible] ressing.
[illegible]	[illegible] stews.
[illegible]	[illegible] ver-side [illegible] ed, or for [illegible] ode.
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[illegible]	[illegible]

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England, the supply of butcher's meat is probably little more than a quarter of a pound per head per day; but then it must be remembered that a very numerous class, including the agricultural labourers and the poorest class of mechanics, rarely, or only occasionally, taste anything in the shape of fresh butcher's meat.

661. THE SLAUGHTERING of all kinds of butcher's meat is conducted in such a way as to remove a large portion of the blood of the animals, and in calves to an unusual extent. These animals are bled once or twice before they are killed—that is, on the day previous, and often on the day before that, and they are finally bled to death. Sheep and lambs, as well as pigs, are also bled to death, by having their throats cut; whilst oxen have their sensibility destroyed by a blow on the head, after which their throats are cut to remove as much blood as possible. All are also starved for twenty-four hours, during which they are only allowed access to water; but though this deprivation of food is said to be adopted in order to improve the quality of the meat, and make it keep, I question its necessity. There is no doubt that the fodder necessary to make up a day's food is thereby saved, but beyond this I do not believe that any advantage is gained, and the cruelty is often very considerable, as we all know what pain a day's starvation causes to ourselves, especially when accompanied by excitement or fear. I am quite sure that a pheasant, or a hare, or even a fine buck, is none the worse for a recent full feed; and I much doubt whether they would be benefitted by a large bleeding on the previous day. It is true, that the red deer has his throat cut as soon as possible after his death, but his haunch is not rejected as food, if the deer-stalker does not reach him in time to allow of his parting with any quantity of that fluid. If the throat is not cut within a very short time after the heart has ceased to beat, little blood will follow the knife, and the body generally will not be affected by it, however the large vessels may be emptied. Nevertheless, the custom exists universally in this country, and there is no doubt that the presence of blood in the vessels leaves a disagreeable impression upon the person who examines meat with a view to eat it himself; and yet the same person will not hesitate to partake of black-puddings, which contain a large proportion of the blood of the pig. The animals required for the supply of large cities are partly killed within them, and partly sent by railway in a dead condition, commonly called *country-killed* meat. In the first method, the cattle and sheep are driven or carried to market alive, and are then, after being sold, driven to the butcher's, where they are killed; and afterwards, in the case of the wholesale carcass-butcher, resold to the retailer, still called a butcher, and frequently dealing in both kinds of meat. In London there is only one live cattle market, the *Metropolitan*, which was removed from its old locality, Smithfield, chiefly because of the danger to the inhabitants from driving oxen through the streets. This nuisance, however, is very little abated by the new market, since the whole of the cattle required by the southern districts must pass and repass through the heart of London. Blackfriars bridge on Monday afternoons is perfectly thronged with cattle and sheep, and is quite as dangerous a thoroughfare as was ever presented by the streets in the vicinity of old Smithfield. There should, without doubt, be a new market on the south side of London; and the cattle and sheep should in each case be slaughtered in an *abattoir* near the place of sale. There is no possibility of getting over the necessity for driving the animals to the market, and as it principally takes place early in the morning, it is of less consequence to the public; but there is no excuse for driving them in mid-day back again, when an arrangement may be so easily made for every purchaser to kill and dress his own animals at his own convenience, provided he does not take them away from the vicinity of the market. Meat carried far by railway is certainly not improved in delicacy of appearance, though I cannot believe that it is *really* injured by it; but the conveyance of it for two or three miles in a spring-cart will not detract one jot from its freshness or bloom, and even if these are affected, still, provided there is no injury done to its intrinsic good qualities, it can be of no real consequence, especially if the arrangement is compulsory upon all.

SUB-SECT. A.—BEEF.

662. THE VARIETIES OF CATTLE which come to the London market are very considerable, the greater part being British, but a very considerable proportion being now imported from Spain and Denmark. The interior of England is not much affected by these foreigners, except through the London market, which, to a certain extent, re-acts upon those held in the provinces. Before the days of railroads there was a difference of nearly twopence a pound in the wholesale prices of meat in London and the country more than one hundred miles from it; but now they assimilate very closely, and sometimes from the great influx of foreign cattle, the metropolis is even lower in price than its surrounding

sources of supply. The best British breeds always command a higher price than any others, because the quality of the meat is very superior, and it is consequently eagerly sought after by all those who can afford it, and by many who cannot, as well. Oxen are generally considered to make better beef than cows, or even heifers, especially by the Londoners, who look upon *cow*-beef as the refuse of that commodity. In some counties, however, ox beef is not valued, and the three-year-old heifer is considered to be the primest article. Much depends upon the breed, the ox in some cases being more hard and tough than in others; much also depends upon the use to which the animal is generally put; thus, in the dairy districts, cow-beef is only killed when no longer of an age to be serviceable in the dairy, and as a consequence of her age, is tough, stringy, and generally devoid of fat. On the other hand, the Hereford cow is often killed because she feeds so fast as to be a bad milker, and this fault is generally detected with her first calf, so that she is doomed to the knife in her fourth year, an age when she is in her prime, and consequently when she would be selected by a good judge irrespective of her failure as a milker. The same remarks apply to bull-beef, which is extraordinarily good and tender when not more than two year's old, at which age the bull is often killed in some districts; but if a five or six-year-old bull is slaughtered, he is only fit for soup; and if his meat is dressed in the usual way, the consequence will probably be that those who partake of it will condemn bull-beef as unfit for human food. Small Scotch cattle rank the highest in the London market, especially when fattened in the rich meadows of England, where they rapidly become ripe for the knife. Most of these are oxen, though there is a small sprinkling of heifers and cows. The Hereford and Durham oxen are also prized, but their beef is large and not so well suited for small families as the above. The Spanish oxen are also large, but the meat is not nearly of such a good quality, and the sea-voyage does not improve them for the table, nor do they generally recover their condition if left to graze in this country. Most of the foreign meat is entirely without any of that mottled fat intermixed with the lean which is so much prized in the "roast beef of old England;" and there is a peculiar flavour about it, which differs considerably from that of our breeds; besides which, it wastes much more in dressing than English or Scotch beef. Foreign bullocks are also larger in the bone, which increases the relative proportion of that commodity to the meat. But far more depends upon the feeding than the breeding, and a well-fed ox of an inferior breed will always eat better than a badly fed one descended from the highest and purest parentage. There are some pastures which will turn out nothing but good beef, whatever cattle may be placed in them, whilst other districts are so unfit for the purpose, that they would not even keep a fat bullock fit for the butcher more than a week or two, and would never make one fit as long as he was supplied with no other food. The more of the rich grass that an ox has, the better will he turn out; and in proportion to the necessity for artificial food will be the deterioration of the beef, though it is not to be doubted that oil-cake, with hay and turnips, will produce better meat than a bad pasture. A preponderance of oil-cake causes the fat to be of a deep yellow, and the lean to taste oily and rich; this is especially the case with those breeds which are much inclined to lay on fat, as the Herefordshire, for instance.

663. IN CHOOSING BEEF, the hand and the eye are both called into play; for not only must the colour and general appearance be in conformity with established rules, but it must feel tender to the touch. Old and hard beef feels elastic when pressed by the finger, while young and tender meat gives way, and *retains the impression of the finger* after it is removed. Beef, when first cut through, ought to present a bluish-red colour, which should rapidly become almost a crimson red on exposure to the air. The grain should be smooth, fine, and transparent-looking, with an intermixture of fat in the rump, sirloin, and ribs. The fat should be firm and white, the deeper the yellow, the more oil-cake has been employed in producing the fat, and the worse will the flavour be. Cow-beef is closer in the grain than that of the ox, and the fat generally more white; in the cow there will always be the udder to mark the sex, or at all events the fat is arranged differently in that region, being more broken up into nodules than in the ox, which presents a large *roll* of fat on each side. Bull-beef is usually more dark and blue than either that of the ox or cow; it is also, when of more than two years of age, hard and tough, and unfit for ordinary kitchen use. The age of the animal may always be known if the head is visible, by counting the rings upon the horns, one of which is added for each year of its life.

664. THE OX, OR COW, is cut up very differently in England and Scotland; and even between London and the provinces, as well as in the several counties themselves, there are many trifling alterations

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in the cut. In every part, however, there are the same prime cuts, consisting of the hind-quarter and the ribs, whilst the remainder of the fore-quarter and the neck are considered coarse and of inferior worth. In every case the carcass is divided into four quarters by the line (*fig.* 75 76, A B), and by a longitudinal section down the back-bone and belly. In the London mode (*fig.* 76), the hind-quarter is divided again into the leg (1), a soup-making part; the round (2), which is also sub-divided at the dotted line into the silver-side, for boiling, and the roasting side, while the upper section forms the mouse buttock; (3) is the H-bone, a well-flavoured but bony piece; (4) the rump, properly so-called; (5) the sirloin, which is usually cut into two or three portions to suit small families, the lowest end having the least bone, and also the largest proportion of the meat called "the under-side," and therefore the most prized; (6, 7, and 8) are the three joints called "the ribs," the middle being the most liked, and all being very extravagant; (9) the clod or sticking-piece is a portion of coarse meat, only fit for gravy-beef or for family pies; (10) the shoulder is a joint sometimes roasted, but it is coarse and unfit for anything except stewing or pies, for the former of which purposes it is very commonly selected; (11) is the brisket, a very nice part of the beast when salted and rolled—the thick part is well adapted for stewing, and the thin for salting; (12 and 13) the thick and thin flank, are composed of layers of fat and lean, which eat tolerably well when salted, but are not much prized by any but the labouring classes, for whom they answer very well when mixed with vegetables and boiled or fried; (14) the veiny-piece is a very indifferent bit of meat, and only suited to making gravy or soup; as also is the shin (15); the cow-heel (16) is boiled down for its oil, and then it makes a very nutritious article of diet; the tongue (17) is salted to form the delicious dish so well known; and the cheek (18) makes an admirable soup; lastly, the tail (19) is cut out with a deep root, and is sold to make a very good kind of soup.

665. ANOTHER MODE, practised in the midland districts of England, is that shown in *fig.* 75, where the round is divided obliquely into two joints—the upper buttock (2) and the under (3). The rump, also, is a large joint, including within its compass the rump and H-bone of London (see 4). The sirloin (5) is cut larger, but it and the ribs (6, 7) are divided in a similar way, though sometimes the latter part is endowed with a different name, as "the chine." The shoulder, or, as it is called, the blade-bone, is cut larger, and more separated from the brisket lying under it. In other respects there is little difference from the London cuts.

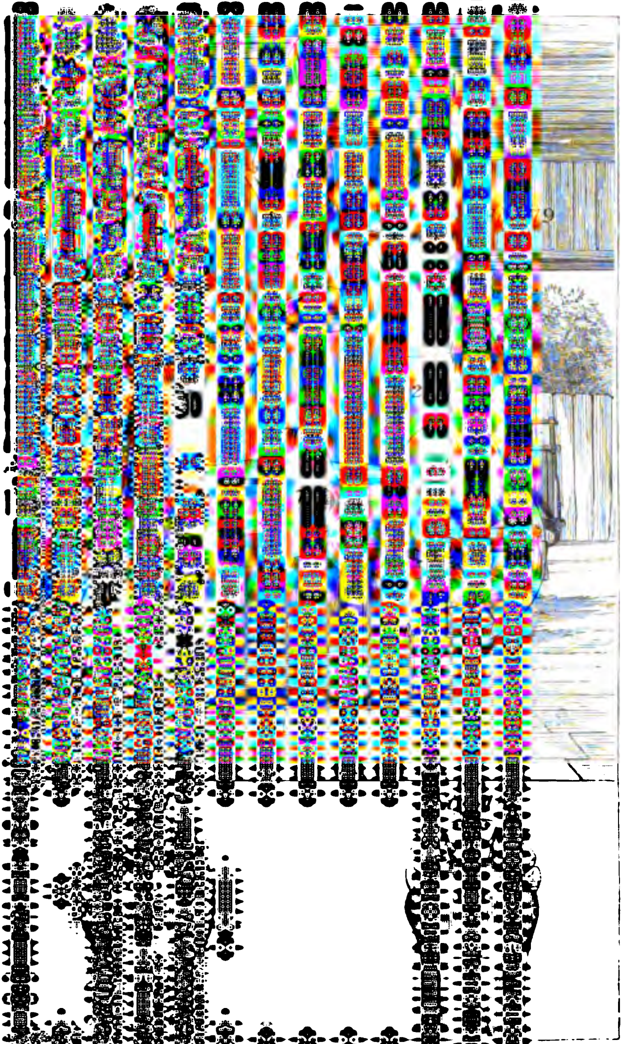
666. THE MOST HIGHLY-PRIZED JOINTS for *flavour* are, for roasting, the sirloin and ribs, and by some people the rump; for boiling, the round (more especially its silver-side) and the H-bone are those most approved of, and by many people the middle part of the brisket. For steaks, the rump is superior to any other part; but to have them in perfection, the whole rump ought to be hung as long as it will bear, according to the season of the year, and then the steaks cut off and dressed. Those cut off the upper or buttock side of the round are sold at a lower rate than rump steaks, but they are not nearly so tender, or so full of flavour and gravy, though equally nourishing perhaps to a sound and strong stomach. In point of *economy*, the sirloin and the ribs, as well as the H-bone and rump, are very disadvantageous, all being loaded with bone; while the round, the flank, the brisket, and the sticking-piece, as well as the shoulder, are made up of pretty nearly solid meat. The purchaser should therefore remember that he not only has to give a higher price per lb. for his sirloin or ribs, but he also has far less solid meat for his money; so that it will be found that 10s. laid out in the round, or any meaty joint, will go nearly twice as far as if spent in procuring any of the more "dainty dishes." The heart (20) is a solid lump of meat, and a very economical one in a large family. It is not generally valued as it deserves, partly from the dislike which many people have to the internal organs. The liver and kidney of the ox are not very well flavoured, being strong and rank, and they are only fit for the stomachs of the labouring classes, and even by them they are very often despised. The stomach is made into tripe, by cleaning and boiling, and is eaten as a delicacy by many people.

667. BEEF IS IN SEASON all the year round.

SUB-SECTION B.—MUTTON.

668. SHEEP, from which this section of the butcher's stock-in-trade is derived, are quite as various in their breeds as those animals from which beef is produced. As cows and oxen are valuable, the former for the milk they give, and the latter as beasts of draught, independently of their use when dead, so sheep besides this same purpose are reared to supply us with wool; and those which produce the most of this valuable commodity are very often the worst when in the shape of mutton. Hence, it becomes the object of the breeder to unite the two qualities as far as possible,

and to add another, upon which depends in great measure the cost of the animal—namely, its faculty of arriving at maturity at an early age. The cost of a sheep when at the butcher's is measured by the amount of food which it has eaten (less its wool and the manure which it has made, and in the case of ewes the value of the lambs); but as these deductions never equal the yearly expenditure for food, it is always important to diminish the number of years which must elapse before the sheep is at its prime. Some years ago mutton was not considered first-rate until four or five years old, but such a thing as a four-year-old *wether* is now rarely heard of; and when it is met with the mutton must be worth 1s. 6d. per lb., if valued by what it has cost. By breeding from young animals which have shown early symptoms of maturity, the sheep-farmer can now produce as good mutton at fourteen months as could formerly have been shown at double that age; and I have certainly eaten it with a high flavour, and rich brown gravy, when not more than the age above specified. Still this is younger than the average at which mutton ought to be eaten, and will only suit flocks which are bred for that purpose almost exclusively. Nothing is better eating than the hind-quarter of a Welsh sheep, *if fat*; but this breed is so restless in its early years that it refuses to lay up any store of that material, and it is very rare to meet with a prime haunch of *Welsh mutton* under 2½ or 3 years old. In the condition in which most of this mutton is brought to London it is far below the average, and, indeed, scarcely fit for food at all, being more like *bad* doe venison than healthy mutton. This sheep is a very wild and restless animal; and even if it is enclosed within strong fences it generally manages to escape and wander over the surrounding country, frequently doing itself more harm in its efforts to escape than if allowed its full liberty. But after the second year it settles down into good habits, and will then often lay on fat, especially about the kidneys, to a considerable extent, in which state a haunch of it is superior to all other kinds of mutton, as far as my experience goes. Large flocks of these sheep are reared in Wales, and sheared there once, sometimes twice, after which they are driven into Herefordshire, Worcestershire, and Shropshire, where they are fattened upon the high pastures, which are quite sufficiently good to serve as a change for the better for the Welsh sheep. The fore-quarter is strong and ill-flavoured, but the haunch fully makes up for this deficiency. They usually weigh from nine to twelve pounds the quarter. *Southdown* mutton ranks next to Welsh, and by some people is considered quite equal or even superior to it. I have no doubt that the *average* of Southdown mutton is superior to the *average* of Welsh, but none that I ever ate could compare with a haunch of Welsh mutton, three years old, and fattened in the uplands of Worcestershire. Its fore-quarter, however, is vastly superior, and it is a much more profitable sheep in all ways. It may, therefore, be sold of first quality at a lower rate, though it requires at least two years, or a little more, to bring it to maturity. Next to them come the various crosses with the Southdown, some of which nearly equal it in point of flavour, though all are rather more coarse, and of a larger size. The *Leicesters* and *Cotswolds*, as well as the *Shropshire* sheep, produce good, large, useful family joints; but they are not nearly so fine-flavoured as those first described, and their legs alone weigh from 12 lbs. to 16 lbs. a-piece. They lay on fat readily; but, like all long-woolled sheep, their mutton has a tendency to taste of the wool, especially in the end of the year. Some foreign sheep are imported from Spain and Germany, but their numbers are not great, and the quality is very inferior to our native breeds. With these objectionable qualities in some over others, it is no wonder that the price of mutton should vary so much as it does, there being frequently, as in beef, a difference of one-quarter the price between the worst and best kinds at market. The breed, the age, and the sex all influence the price; wethers being considered much superior to ewes, three or four-year-olds better than two, and this than one-and-a-half, and the Southdown breed and its crosses being in general more highly valued than any others. Ewe mutton in the autumn, when not more than two years old, is often quite equal to the average, and superior, when of a good breed, to wether mutton of an inferior kind. The age may be guessed by the hardness and whiteness of the outer layer of the bone when cut across, and by the teeth when the head is left attached. The sheep sheds its incisors or front teeth, and the central pair are changed at about the age of fifteen months, the permanent teeth growing up in their place by the end of three months from that time. These are soon followed by the other incisors at intervals, the first being about six and then nine months; so that the sheep which has just shed its *four* central teeth is one year and nine months old, and it is two years and a half when it has shed *six* teeth, the complete set being changed by the age of three years and a quarter, or a



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little more, varying with the tendency to early maturity or the reverse. By these signs the *gourmand* may, if he chooses to take the trouble, ascertain what is really the age of his mutton. *Fig.* 77 shows the jaw of the sheep at one year and three-quarters, which is on the average the earliest age at which it is fit for mutton, though, as I before remarked, in some flocks the maturity is so great as to allow of an earlier use of the knife. *Fig.* 78 is a view of the mouth at three years and a quarter, an age at which wethers are now seldom brought to market, and when ewes are no longer capable of producing first-class meat, but at which they are often made into mutton after having had two lambs. Beyond this age there is seldom any necessity for a guide, but the broken edges or entire loss of the teeth are a good test when necessary. *Ram-mutton* is coarse, woolly-flavoured, and tough, though often sold, at the lowest market price, to those who are ignorant of its bad qualities. It is of a deep bluish red, and the fat is more spongy than that of the ewe or wether. Ewe mutton is easily known by the udder left as a glandular-looking lump on the inside of the leg.

669. The Sheep is killed by first tying its four legs together, then placing it on a wooden frame, on its side, and thrusting a knife behind the jaw through the neck, so as to divide the large blood vessels. It soon bleeds to death, and it is then rapidly skinned, opened, and cleared of its internal organs, the heart and liver only being eaten, and the intestines used for holding sausages; while the stomach, called the "paunch," is given to dogs, and the "lights" to the cat. The head, lights, heart, and liver, are usually sold together, and called "the pluck," the price being from 1s. 6d. to 2s. 6d.; the paunch fetches 2d. to 3d.

670. The Sheep is Cut up nearly in the same manner all over England, there being, however, a slight variation in Scotland. As in the ox, the primary division is into four quarters, which are made nearly in the same manner. The whole hind-quarter is called the *haunch* (see 1, *fig.* 79); when this is divided it makes two joints, the *leg* (*a*, *fig.* 80), and the *loin* (*b*); the two loins are sometimes left together, constituting what is called the *saddle*. The fore-quarter, again, is divided into the shoulder, which is raised from the ribs under it (see 4, *fig.* 79), and afterwards the remainder is divided longitudinally into the neck (2), and the breast (3). The lower end of the neck is called the *scrag end*, and is that part uncovered by fat, lying under the shoulder.

671. The Value of these several joints varies considerably, the leg and loin being the dearest, and the neck, breast, and shoulder the cheapest, with a difference of a penny or three-halfpence a pound on the average. The leg is nearly all solid meat, and it is consequently a very economical joint. The haunch has a considerable quantity of bone in the loin, and also a piece of flank, which is comparatively worthless. In the shoulder there is a still larger amount of bone, and the lean is coarse, containing also a large quantity of fat. For chops the loin is generally most highly prized, but many people think the best end of the neck quite equal, if not superior to it. The fat ought to be taken off before dressing, and it is superior to suet for puddings.

672. Mutton is in season throughout the year, but in the autumn it is not so good as at the other seasons of the year, the meat being woolly flavoured.

673. The Best Test for Mutton is the flavour when it comes to the table, together with the quantity and depth of colour of the gravy. Young and ill-fed mutton gapes on cutting it, and is tasteless and spongy, and the gravy scanty, pale, and watery.

Sub-sect. C.—Lamb.

674. Lamb does not change its name when exposed in the shops of the butchers, being still lamb there as in its native fields. There is as great a difference here in the various breeds as in beef and mutton; but to most people lamb is lamb, let the quality be good, bad, or indifferent. The *Dorsetshire lambs* are the earliest, next to *house lamb*, which is capable of being produced at Christmas—the warmth of the kitchen enabling the rearer to shelter the lamb at any season. These early lambs are very delicate in flavour, and fetch high prices in London and elsewhere; and up to the time of Easter, whenever that may be, the fore-quarter generally fetches nearly double the price of beef or mutton. Grass lamb lasts from March till August.

675. Lamb is slaughtered like the sheep, and cut up also in the same way, though it is never sold except in quarters, until after Easter. The fore-quarter is most highly valued, and it is dressed whole.

676. The Freshness or Staleness of Lamb are the *chief* points to be attended to in purchasing it, though, as I before remarked, breed has something to do with the flavour in eating it. The Dorsetshire lambs only can be obtained early in the season, consequently there is then "Hobson's choice;" but afterwards the Southdown are the best, and they may be known by their black legs and faces, which are

generally left on to mark their superiority. With regard to freshness, the vein of the fore-quarter is the best guide; it should be blue, without any tinge of green, the latter colour marking the commencement of putrescence. In the hind-quarter the kidney fat turns slightly green, and gives a faint smell, not exactly putrid, but approaching to it; the knuckle also ought not to be limp, but should preserve its stiffness. The eyes are the best guide of all, and as long as they are full and bright the buyer may rest assured that the lamb is only just killed.

SUB-SECT. D.—VEAL.

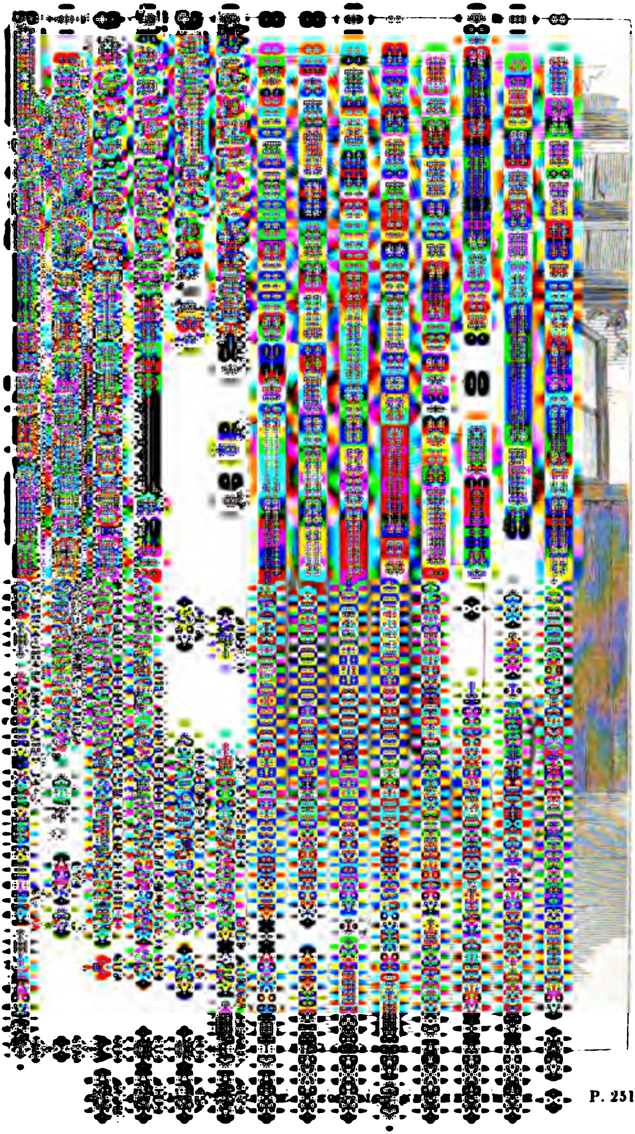
677. CALVES PRODUCE VEAL in nearly, but not quite, as great variety as bullocks and sheep do beef and mutton; but in respect to veal, the alteration is more in reference to the diet and management, than to the breed. Nevertheless, this last influence is very great, and the difference between an Alderney calf and that of a Hereford is very considerable, though here also the milk of the former being much richer and more plentiful, may in some measure account for the difference. Large quantities of veal are brought up to London by the railways, and some from Belgium by the steamers. The greater part of this is small and devoid of fat, but of good flavour nevertheless. The prime veal of the London market is supplied from the adjoining counties, where the fattening of them is carried on by men who buy up the calves from the dairy districts, and bring them up by cows which are able to suckle another in addition to their own. At the age of ten or eleven weeks these calves weigh nearly 20 stone, and are then worth £4 to £4 10s. a-piece, at the usual price of veal. In some counties the calves are not killed till they are still larger, while in Dorsetshire they are rarely suffered to live more than three weeks, the cow-calves being invariably saved there to be reared as milkers.

678. CALVES, as already mentioned, are bled considerably before they are killed, which is managed differently from the killing of the lamb or sheep. The calf is sometimes hung up by the hind legs before its throat is cut, but in all cases it is hung up the moment the veins are divided, so as to cause as much as possible of the blood to flow out, and thus leave the meat as white as it is capable of appearing, depending a good deal in this respect upon the feeding and the breed. As soon as the blood is all drained away, the butcher makes a small slit on the inside of each leg, fore and hind, and then drives his steel as far as it will go down between the skin and the flesh, making it spread the cellular membrane a little at the point, so as to form a small cavity. Into this passage he next introduces a pipe, which he uses to blow into and inflate the whole cellular membrane of each calf, driving in as much as he can by the power of his lungs, and then by the aid of the hand pushing and rolling it under the skin in all directions. The object of this is to make the veal look less thin and cadaverous-looking than it naturally does; but as it causes the meat to spoil much more rapidly than it otherwise would, it is not practised in the veal which travels any distance, and hence this kind looks worse than that of the home-killed calf.

679. THE CALF is cut up somewhat differently to either beef or mutton, but it also is quartered in the first instance. The hind-quarter is cut up into the *leg*, which, again, is subdivided into the *knuckle* (*fig.* 81, 1), and the *fillet* (2); the *loin* (3) is often divided into the *best end*, lower in position, and containing the kidney and kidney-fat, and the *chump end* above, in which is a great deal of bone. In the fore-quarter, the *shoulder* (6) is removed in all cases, and sold by itself at a price lower than any other part, it being rather coarse in texture and devoid of fat. It is therefore often bought as an economical family joint. The *neck* (4) is considered by some people very good; but it is full of bone, and not very economical on that account. Its *best end*, which is uppermost, is far superior to the *scrag*, which lies under the shoulder. The *breast* (5) is likewise often divided into two portions, the upper being the *best end*, and the lower the *brisket*, in which lies the *sweetbread*, a great delicacy to some people. In the internal parts the heart, liver, sweetbread, and kidney are all eaten, and are good of their kind. The sweetbread is, however, attached to the breast, and the kidney to the loin.

680. IN POINT OF ECONOMY there is nothing like the leg, its meat is all solid, except the bone, which weighs considerably, it is true, but, nevertheless, it goes a great way in supplying the wants of a family. That part called the fillet has the bone taken out, but it is sold at a higher price in consequence. The shoulder is generally to be bought at a penny or three-halfpence a pound cheaper, and it may then be considered more economical, but it has a heavy *knuckle* also, and besides this a large bladebone with a thick edge of gristle. There is no part but the leg which will serve for cutlets, the meat of the shoulder not being adapted for that purpose. The breast stews or boils well, and serves for several purposes in made-dishes.

681. IN CHOOSING VEAL, select that of which the kidney is well covered with



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thick *solid* and white fat. The whitest meat is not always the best flavoured, being made so by bleeding and improper feeding, with that object in view. The cow-calf is preferred when it can be obtained; and it may be known by the udder on the fillet. The bull-calf makes darker and harder veal. Veal, like lamb, requires to be quite fresh, which is shown by the blue or red colour of the veins inside the shoulder. The flesh should be dry, and not flabby, and the kidney-fat should be free from smell.

682. VEAL IS IN SEASON from May to September, but an occasional supply is obtained at other times, as some cows are required to calve all the year round to keep up the regular supply of milk.

SUB-SECT. E.—PORK.

683. PIGS are sold by the ordinary butcher, as well as the pork-butcher, at such a variety of ages that their flesh cannot so completely be identified by the age as the animals we have hitherto considered. It first makes its appearance on the table at five or six weeks old, when it is called a *sucking-pig;* after this the animal is respited until it is ten weeks or three months of age, from which time up to six or eight months it comes into the market as *pork*. Then, again, it waits until a year old or more, when it is killed for *bacon-meat* or *hams*. Both pork and bacon-meat vary in quality greatly; breed and feeding being the chief elements in the difference. Dairy-fed pork holds the highest place in public estimation, which it richly deserves, when the pig is of a good sort; but this does not always happen. Farmers' pigs, though dairy-fed, are not always confined to that diet, for they are made the scavengers of the farm, and are allowed to fill themselves upon any filth or carrion that happens to be within their reach. Pigs fed like those of the butchers are hard and devoid of fat, and unless they are finished with meal and potatoes, they are not to be considered of superior quality. None are better than the pigs fed on the refuse of the mill and starch-factories, where thousands are fattened every year. Bacon-meat may easily be too fat for common use, and the size best adapted for this purpose ranges from ten to fifteen score, with a moderate thickness of fat. For the agricultural labourer bacon can scarcely be too thick in fat, because he uses it as a relish to his bread and potatoes; but this is not the case in the housekeeping of the middle classes, and for them a medium degree is far the most economical and agreeable to the palate.

684. PIGS are killed by cutting their throats longitudinally, so as not to injure the appearance of the neck or jowl. They are first muzzled to prevent their biting, and their legs tied together, after which they are placed on a raised bench, and their throats cut deeply down into the vessels at the top of the chest. The blood is collected for black-puddings, being stirred to prevent its coagulating. When dead, the hair is taken off either by scalding and scraping (which plan is always adopted for pork, and sometimes for bacon also) or by covering it with straw, and then setting this on fire, and so burning the bristles off, following this up by washing the surface with hot water.

685. THE CUTTING-UP OF THE PIG is practised quite differently in different counties, and also in accordance with the purpose for which it is intended. For pork there is not much variation, the carcass being divided into the *leg* (1), *loin* (2), the *neck* or *fore-loin* (3), the *belly* or *spring* (5), and the *hand* (6); besides which, there are the *pettitoes* cut off the leg and hand, and the internals consisting of the *heart*, *liver*, and *chitterlings*, which last are the small intestines cleaned and prepared for the cook. For bacon the carcass is cut up very variously in regard to the parts which are removed for present use; but in reference to the parts reserved for bacon, there is only one important point in which different butchers vary their use of the chopper. In all cases the whole outside, with the exception of the head, is reserved for curing, in one large side, called a *side* or *gammon*; and in others with the *leg* (*fig.* 82, 1) removed, when the remainder is called a *flitch* (2). The variation depends upon the treatment of the backbone, which is sometimes chopped down the middle, as in the other kinds of meat; in others down on each side of it, leaving the whole backbone entire, with a layer of meat and fat the width of the bone, and the whole being called the *chine*, and reserved for pickling, to use in a green state. But there is also a considerable amount of lean on the inside of the flitch which is removed, the knife being generally carried so as to leave a layer of lean attached to the fat, though in some districts the reverse is the case, and a layer of fat is removed on the surface of the lean. The ribs towards the front are not cut away, generally speaking, but the flitch has a few inches of them left behind and cured with it. The parts thus removed are the *griskin*, the *spare-rib*, and the *bladebone*, the lower part of the hand being left in the flitch. This meat, thus taken out of bacon-pigs, is generally called *pig-meat*, and is used either to roast, as the griskin and spare-rib, or to make into

sausages and pork-pies, as the bladebone and general trimming-pieces. When the hog is not too large and coarse, and when it has not been kept too long upon bean-flour, or other heating food, the pig-meat is very well-flavoured and wholesome; but when the reverse of this is the case it often leads to disorder of the stomach, and sometimes to serious mischief. This pig-meat, in the localities where bacon is cured to any great extent, is to be bought at very low prices; but in London and other large towns, where sausages and pork-pies find a ready sale, it is scarcely to be bought under the top price of pork or bacon-meat.

686. **THE MOST ECONOMICAL JOINT IN PORK** is the leg, though all are much more solid than mutton or beef, and comparatively free from bone. Pork goes much farther than any other meat, one reason for which is that the fat does not melt away in boiling or roasting to the same extent. It is also generally lower in cost per lb., so that altogether it is the cheapest butcher's meat which can be used in a family; but it will not be found to be wholesome as a regular article of diet, and can only be borne as a change, in which capacity it is much liked by most people, and does rather good than harm.

687. **IN CHOOSING PORK**, take a thin piece of the lean between the finger, and if of good quality it will readily yield to a smart squeeze. The colour ought to be rather pale than red. The rind also ought to be thin and delicate. The freshness is indicated by the transparency and freedom from any green tint or unwholesome smell. Measly pork is known by the fat containing enlarged glands, called kernels in the trade, and by the lean yielding little specks of matter on pressure. This is not wholesome, or indeed fit for human food.

SECT. 3.—HAMS, CURED AND PRESERVED MEATS.

SUB-SECT. A.—BACON, HAM, AND OTHER SALT MEATS.

688. **BACON** is sold in London and the large towns and cities by dealers quite distinct from the butchers, under the name of *dealers in provisions*, or sometimes *provision merchants*. Why bacon, hams, and tongues, with butter and cheese, should exclusively be called by this name is rather singular; but so it is; and the trade is universally recognised by that title in this country. The quality of bacon is very varying, according to the seat of its feeding and curing. The best kinds are the *Wiltshire* and the *Yorkshire* bacon, which are the highest in price and the best in quality; but many other counties cure their bacon in the same way, and rival these far-famed localities in every respect but reputation. The former of these is cured with more saltpetre, and is consequently of a richer red, whilst the latter bacon is paler and generally more moist. *Irish bacon* is, in general, coarser and inferior in flavour, but some of it is as good as either the Wiltshire or Yorkshire make, and it is frequently sold for them. It is sent to London in sides merely roughly salted, and is then dried here and rendered fit for the market by smoking or otherwise. A great deal of the smoked bacon and hams is dried and smoked in the counties where it is made, but in London, also, part is thus prepared; and no little of it is merely rubbed over with impure pyroligneous acid, which gives it exactly the same flavour at half the cost, or less, and is not prejudicial to health either. Indeed, it is exactly the same substance as is applied to the bacon in smoking, only that in the one case it is used as soon as it is given off by the wood, and in the other it is collected and stored for use, and is then brushed over the bacon by the hand. Green hams and bacon lose about one twelfth of their weight by drying, more or less according to the extent to which it is carried, and yet foreign smoked and dried hams are sold at a lower rate than those which are not so prepared. This is to me a most curious and unaccountable instance of the uncertainty of the markets, since it seems extraordinary that a ham after smoking and losing weight should be sold for less money per lb. than before. It is not as if it were a perishable article in either case, nor as if any person were obliged to smoke in order to preserve it. Indeed, there seems no accounting for it; but such is the fact, for at present I can buy smoked hams at 1d. per lb. less than I can unsmoked ones of similar quality, certainly not inferior at all events. Dried hams or bacon, whenever they are not more than 2d. per lb. dearer than fresh pork are cheaper than it, inasmuch as the pork loses weight in a variety of ways during the process of curing, and fully equal to a fourth or fifth of the whole. There is, however, generally rather more than this difference, and the careful housekeeper, who has accommodation for the purpose, will cure her own bacon and hams.

689. **THE BEST PARTS OF THE FLITCH**, towards the middle of it, sell even higher than the ham, which comes next in price; then the higher and lower parts of the flitch, and finally the hand.

690. **OX TONGUES** are sold by all dealers in provisions, either prepared in this

country or imported from abroad; and I am afraid a great many of these are really the tongues of horses. They are sent from Mexico and South America in large quantities, and as they fetch a higher price than the rest of the animal, they are worth curing with some care.

691. SALT BEEF AND PICKLED PORK are sold by the butchers, and also by the porkmen, being prepared by immersion in brine, made by simply dissolving salt in water. The price is generally about the same as for fresh meat; the value of the salt being very little, and the weight being neither increased nor diminished by this process. The meat gives out a considerable quantity of blood which stains the pickle, but at the same time it absorbs an equivalent amount of salt and water; so that the seller, although he retains a considerable quantity of useless brine, does not thereby sustain any loss, inasmuch as his articles at the end of a week's immersion weigh as much as at the beginning. When, therefore, the butcher has more beef or fresh pork than he is likely to sell, he drops it into the pickling-tub, and at the end of a week, or less, it is available for any person who wants it for immediate use. Some years ago a syringe was invented for rapidly forcing the salt and water into the pores of the meat, but it has not stood the test of a prolonged trial, and it is now out of use, as far as I know. There is an enormous amount of pickled beef and pork imported, for the use of the navy, from Ireland and the United States; but its appearance is not suited to the tastes of the population of this country, and it does not find a market at any price.

692. All kinds of cured provisions are in the trade bought by the smell, the dealer thrusting a long and thin iron instrument into the part near the bone, and on its withdrawal putting it to his nose, by which he is enabled to judge how it will suit his customers. These latter must, however, generally depend upon their eyes as well, and upon the confidence which they can rest in the provision-dealer of whom they are making their purchase. Few but those in the constant habit can form an opinion worthy of reliance, by any other means than their taste.

SUB-SECT. B.—SAUSAGES, PRESERVED MEATS, &c.

693. SAUSAGES, SAVELOYS, POLONIES, BLACK-PUDDINGS, CORNED BEEF, REINDEER TONGUES, PORK PIES, and a whole host of similar commodities, are sold at the "sausage shops" in London and the large towns, and the quantities of inferior meat thus consumed are enormous. It is well known that in Birmingham, Liverpool, Manchester, and other large manufacturing towns, very inferior meat finds a ready sale at less than half the price of the ordinary quality, and this is soon converted into some one or other of the various forms enumerated above, by the agency of the sausage-machine. The old and hackneyed story of the sausage-maker who suddenly disappeared, and whose fate was only known by the appearance of a button in a sausage some time after, is perhaps an exaggeration; but there can be no doubt that all sorts of meat are supplied to their choppers, and that when pork is dear, or otherwise unavailable, something must be found at a price to suit the market. Farmers can always sell their cows and sheep which they have been *obliged to kill*, if tolerably meaty, and within a given distance of a large market, although there may be a penalty for exposing it for sale; but there is no power of examining the premises of the sausage-maker, and his character is the sole safeguard to those who deal with him. Black-puddings are probably as little adulterated as any article, since it would be difficult to find any other material cheaper than the blood of which they are properly made, and which is generally to be obtained in sufficient quantities. Pork-pies are made and sold in London to an enormous extent; it is said that one maker alone sells from twenty to thirty thousand a day, sending them all over the town in carts for the purpose. They are of very good flavour, and made from wholesome meat, as must of necessity be the case when such large quantities are made up by one establishment. It may answer the purpose of a little sausage-maker to smuggle into his cellar all sorts of trash, but on the large scale it would be utterly impossible to do this, and therefore it is reasonable to suppose that these very popular pork-pies are genuine in their component parts.

694. PRESERVED MEATS are chiefly imported from abroad, at all events those suited to the use of our inland population. The process by which animal and vegetable substances are made capable of resisting the usual effects of death, is very similar to that which has long been adopted in the bottling of green gooseberries, but carried on in a manner more suited to the increased tendency to decomposition. Gooseberries require only to be boiled in bottles and then to be covered from the air while hot, after which they may be kept for a considerable time, the air being however only *partially* expelled. In the meat-preserving process, the flesh is likewise submitted to the action of boiling water, and it is then stowed in canisters, as being cheaper and more safe

from fracture, and also more capable of being securely soldered down, and freed from the action of the air. But in addition to these actions, which are exactly similar in principle to the bottling of gooseberries, when the canister is full and ready for sealing, it is again submitted to the action of heat, and by the steam given off all the air is removed, or nearly all, there still remaining a highly-rarified medium. After this, it is at once soldered down, and if the process is properly conducted the meat will keep for a very long time, even in warm climates. Meat thus prepared is imported into this country and sold wholesale at about 5d. to 9d. per lb., according to the quality and kind; inferior beef being to be bought at the lower price, and mutton and veal readily fetching the higher rate. Strong mutton-broth and beef-soup are also preserved in the same way, but none of these have been yet introduced into England at such a price as to make them economical substitutes for fresh meat, the price being as nearly as possible the same. The price of the meat in Australia or Moldavia, where they are preserved, is not more than 1d. per lb.; but the cost of the canisters, and of boiling, packing, and importing brings them up to the price at which they are sold here. But the more highly-priced articles, such as turtle, may be, and are, sold at a rate much cheaper than the fresh material. Thus, a quart-tin of turtle is to be bought for 18s., which will suffice to make soup enough for a large party of eighteen or twenty people, with the addition only of some clear stock and condiments amounting to little more than a couple of shillings. Venison, also, for stewing or for pasties, is sold in the same way, preserved in canisters; but as English fresh venison for this purpose can generally be bought at 8d. per lb., no saving is here effected; and the quality is not very good, foreign venison being inferior to our park-fed breed. Preserved vegetables are only suited to sea-voyages, inasmuch as the price is so much higher than our garden produce when fresh. Peas and beans, and other similar garden produce, may be obtained *when out of season*, preserved in this way, cheaper than in Covent-garden market: but the colour is not good, unless it is artificially produced, and hence the article is not used to any extent in the interior, however well it may be suited for voyages of long duration. There is a prejudice against the use of preserved beef, from the idea that it is composed of horseflesh; but there is no more reason for the use of this article in the preserving of meat in this way any more than in its salting and barrelling. There can be no doubt that horseflesh *may be* substituted for beef in many instances, wherever any kind of curing is carried on, but the object is not very apparent when it is recollected that in the preserving process the tallow is the chief article which brings the money in as a return for the outlay, and this kind of fat in the horse is not nearly of such a good quality as in the ox. If, therefore, it is not the *interest* of the curer to substitute the one for the other, we may rely upon it that it will not be attempted, except as an exceptional case. A horse coming in their way would probably not be wasted, but on the large scale no such substitute, I believe, really occurs. Healthy horseflesh is quite as fitted for human food as beef or mutton, and is much more short and tender in the grain than the former food; but the price of well-conditioned horses is higher than that of bullocks nearly all the world over, so that it is useless to entertain the question of its applicability as an article of food so long as this is the case. It is now dearer, and it must remain so, because a horse is a more delicate feeder than an ox, and it will cost more by the time it is fit for food, unless it earns its keep by working in the interim; but if capable of doing this it will be kept until worn out or diseased, and it is then certainly not to be compared with sound and wholesome beef. The microscope does not readily detect the difference between beef and horseflesh, so that there are no means of distinguishing the one from the other, except by the smell and flavour, which to a practised nose and palate are very easily known from one another. Dr. Hassall, who examined several varieties of preserved provisions, did not discover any such substitution; but he himself admits that it would be "of such a nature as to escape detection," but, as he observes, the substitution of the livers or kidneys would be detected by the texture alone, which would readily serve to show the difference from muscular fibre. That gentleman found, in his examinations, that out of thirty-four cases of preserved animal and vegetable substances, twenty-nine were in good condition, five being unsound, of which, however, three were vegetables, and one milk; the only failure in the case of an animal substance being mock-turtle soup, in which decomposition had commenced, and it was scarcely edible. The fish examined by him were all in a good state of preservation, as well as the preserved soups and broths, except only the mock-turtle. In sudden emergencies, therefore, when soup or broth is required for an invalid, recourse may be had to this article; but, as I shall hereafter show, there is nothing like fresh-prepared diet for the sick-room, in all cases; and I believe the only exception is in the case of real turtle, which is prepared in a very delicate way for invalids, and which in that way, or as soup, is a most convenient and cheap form for the use of the sick-room.

695. OLIVE OIL is also used as a means of preserving fish; sardines and anchovies being stored in this way so as to keep for an unlimited time, the cases in which they are preserved being of tin. *Sardines a l'huile* and *anchovies a l'huile* are now used in large quantities in this country as a breakfast or luncheon relish, especially the former, which forms a considerable article of import from the shores of the Mediterranean.

696. GLYCERINE is a new substance, propounded by its chief makers as the best medium for preserving all sorts of perishable articles. From its composition it is likely to effect this desirable purpose; and as it readily mixes with water, retaining its property of preventing decomposition, it may serve, perhaps, as a convenient adjunct to our already recognised means, being perhaps most usefully applied as an ingredient in our ham and bacon pickles instead of sugar, whose flavour it closely resembles. Oxygen forms a very small proportion of its elementary composition, and to this it most probably owes its preserving powers; that principle being at the root of all decomposition in animal and vegetable substances, so that the more completely it can be expelled, the better is the preservative process. Time alone, however, will settle this question, which at present is only a theoretical proposition, though it is well known that glycerine has an extraordinary power of preserving animal substances from decay. That it will not preserve fruits or vegetables I have proved by experiment; decomposition going on nearly as fast as in water.

SECT. 4.—VENISON.

697. VENISON is the flesh of the red and fallow-deer, and it is used and divided, or cut up, the same as mutton. It is seldom purchased, and never except as an article of luxury. Pastry cooks, fruiterers, game salesmen, and fishmongers are usually the dealers in this kind of meat, and buy their deer, either bucks or does, from the park-keepers of our nobility and gentry, selling it out in quarters, or sometimes the fore-quarter being divided by them.

698. VENISON is a very wholesome and digestible food, closely resembling mutton in every respect but the flavour, which is higher and peculiar to it. This kind of meat is therefore well adapted to invalids, if their palates will bear it.

699. BUCK VENISON is in season in the middle of summer, and doe venison during the winter months.

700. THE PRICE of the haunch of buck venison is usually from two to three guineas. Doe venison and the fore-quarters of buck venison sell for about 8d. per pound.

SECT. 5.—POULTRY, GAME, AND WILDFOWL.

SUB-SECT. A.—DOMESTIC POULTRY.

701. THE VARIETIES OF DOMESTIC POULTRY brought to table in this country are—1st, *turkeys*; 2nd, *guinea-fowl*; 3rd, *fowls*; 4th, *geese*; 5th, *ducks*; and, 6th, *pigeons*.

702. GENERAL REMARKS.—Poultry and game are consumed in considerable numbers in Great Britain, and as a treat or change for more solid articles of diet, or as invalid food, they are of very great importance. In point of economy, however, there is no kind of poultry which will bear comparison with butcher's meat; and it is necessary that the housekeeper should be acquainted with this fact, or she may be deluded by her wishes, or those of her charge, into the belief that she is practising economy when she is really very extravagant. But in spite of this general rule, there are exceptions, owing to the difficulty of keeping all kinds of poultry at the season of the year when they are most plentiful, and when also they are the best in point of flavour. It often happens that a market is overstocked, and that the sellers, after having refused four or five shillings a couple for fowls in the morning, will take two and sixpence or three shillings in the evening. If, therefore, the caterer can manage to visit the market at that time, poultry may be frequently purchased at a price which will make it nearly equal to butcher's meat in cost. Yet there is another thing to be considered besides the prime cost, and that is the outlay in stuffing, sauces, and gravies. Turkeys are always stuffed and eaten with bread-sauce and made-gravy. Fowls require both the two last adjuncts, while geese and ducks are never eaten without stuffing and gravy, and often with apple-sauce in addition. Hence, the whole expense of putting poultry upon the table is considerably more than the mere market-payment, especially when the sauces must be made in an extravagant manner with plenty of cream. The digestibility of fowls and turkeys is very great, when eaten without a lot of sauces, which, however palatable, are not very wholesome, and therefore, even in families, their use should be encouraged as far as the finances will permit. The price of poultry will generally average from 8d. to 10d. per lb. before drawing, which removes

about one-third of the weight, and brings the price up to 1s. per lb., if originally sold at 8d.; or to 1s. 3d., if sold at 10d.; and this is altogether exclusive of the bones, which weigh something considerable, though not in the same proportion as the bone of a rump of beef, or a shoulder of mutton or veal. At this rate the cost is nearly double that of meat, and, allowing for sauces and gravies, quite as much as that. It is, therefore, only by making the most of her carving, and by adding bacon or ham pretty liberally to her dish of poultry, that the careful manager can afford an occasional use of this much-prized article of diet.

703. TURKEYS are reared and fatted by the farmers' wives, mainly, throughout the whole of Great Britain, the largest and best coming from Norfolk, Cambridgeshire, and Suffolk, where they are treated to more food than they like by "cramming" them. The average weight of the cock turkey is about 12 lb., and that of the hen 8 lb., the latter being generally considered to have the more delicate flavour of the two. Thirty pounds is not an uncommon weight for a Norfolk cock turkey at Christmas; but these are generally two years old, and harder and more stringy in the legs than the younger birds. They are in season from September till March, and the turkey-poults from that time till June.

704. GUINEA-FOWL AND PEA-HENS are eaten throughout England as dainties; but they do not come into the London market to any great extent, nor are they so highly valued there as in the rural districts. They are in season at the same time of the year as the turkey, and resemble it in flavour, though the flesh is not so juicy.

705. FOWLS are sold in London under three denominations, viz.: *spring chickens*, *capons*, and *fowls*. The first are the most highly valued, being the produce of very late hatches, and reared with great care, chiefly in the cottages of the poor, who make the most profitable rearers of poultry in most cases. When very small they often fetch 7s. to 9s. a couple, and afterwards, towards the middle of spring, 6s. is the average price. *Capons* are the young cocks operated on by those who understand the process, and they are thereby made to grow into large and fleshy birds, with a good flavour, and are highly valued. They are in season up to Christmas. *Fowls* generally mean barn-door fowls, or those which have been put up only for a short time. Many people object to barn-door fowls as being poor and devoid of flavour; but if they are young, of good breed, and regularly fed, they are, in my opinion, superior to all others. The Dorking fowl, known by its five toes, is generally considered to be superior to all others for the table; and it certainly is a fine bird, full in the breast, with a great capacity for fattening, and yet without any gross or greasy flavour. But there is none like the game bird for roasting, and for that mode of dressing it is as superior to all others as the pheasant is to the common fowl; but for boiling the colour of the skin is too yellow. The cross with the Cochin China and game is also a very fine and well-flavoured bird, but not equal to the true game in flavour. Bantams, especially those of the game breed, are also very highly flavoured; but they are not often in the market. The AGE, next to the breed, is of most importance in choosing fowls; and this may be known by the size and hardness of the spur in capons and cockerels, and by the hardness of the breastbone in them as well as in pullets. It is very often the practice to break the breastbone down, so as to make the breast appear more plump than it otherwise would, and also to make it feel soft to the touch; but it is easy to detect this imposture, and to feel the hardness or the reverse of the projecting keel of the breastbone by pinching it between the fingers, giving it a twist at the same time.

706. GEESE are reared in large numbers for the feathers they produce, as well as for their table value. They are not however considered to pay well by any one who has not the run of common land, as they eat and spoil a much greater quantity of grass than, from their size, could be supposed possible. The eggs are hatched early in May, and by August the goslings are of fair size, but very insipid and devoid of all the real flavour of the adult bird. They fetch a high price, and are sold to those who indulge their fancies, though it appears a great pity to spoil so good a dish as a Michaelmas goose. From that time to Christmas they are in their prime, and few dishes are better than a well-fed young goose of eight or ten pounds. These fetch from 5s. to 7s. in the London market, and may sometimes be bought at 4s. 6d., but when weighed after drawing they will cost at least 1s. per lb., and cannot therefore be considered economical.

707. DUCKS, especially of the true Aylesbury breed, are considered a great dainty by most people. They are bred in great numbers for the London market, and some of them reach the weight of 7 lb. by the time they are six or seven months old. They are brought up in the cottages of the Buckinghamshire labourers, and fetch a high price when they can be taken to market in time for the early peas 7s., and even 9s., a couple being the ordinary price for early ducks.

708. PIGEONS are kept in countless flocks

by some farmers, who kill and send to market a large number throughout the season, which lasts from March to October. The usual price is from 4d. to 6d. a piece.

SUB-SECT. B.—GAME AND WILDFOWL.

709. Under this head are comprehended all the wild birds which are captured in this country, and considered good for the table, as well as rabbits and hares. The list is a very long one, when all the occasional species are enumerated; but the following are those chiefly met with:—1st, *pheasant;* 2nd, *black game* and the *capercaillie;* 3rd, *grouse* and *ptarmigan;* 4th, *partridges;* 5th, *quail, landrail,* and *larks;* 6th, *wildfowl;* 7th, *woodcocks* and *snipes;* 8th, *hares;* 9th, *rabbits.*

710. **The Pheasant** is sold in the open market, as well as in the shops of the game-dealers, at 7s. a brace on the average. It cannot, therefore, be considered as coming within the bounds of domestic economy, and will only be purchased for the sake of an offering to social relations.

711. **Black Game and the Capercaillie** are still more extravagant, being seldom to be bought under 15s. or a guinea the brace for the former, and 30s. for the latter.

712. **Grouse and Ptarmigan** are sold at much lower prices, the former being often so plentiful as to glut the market at a time when they will not keep; and the latter being imported in great numbers from Norway, packed in ice. Grouse, when plentiful, average 3s. 6d. per brace; and ptarmigan from 2s. to 3s.; but the latter are poor in condition, and of very little flavour.

713. **Quail, Landrail, and Larks** vary in price too much to require notice. Larks are considered a great delicacy when artificially fattened.

714. **Wildfowl, consisting of Wild Ducks, Widgeon, and Teal,** are in season from September till February, but they are seldom plentiful till January, when ducks may sometimes be bought at 2s. per couple; but even then they are not cheap, as there is very little meat upon them. They are very good eating, and are highly valued by the epicure.

715. **Woodcocks and Snipes** come into season in November, but the locality where they are met with changes from that time till they go out. The high price of cocks, 7s. a-couple, forbids their use, except to those who do not need any control of their purses.

716. **Hares** may often be purchased at a price which renders them absolutely worthy of the attention of the good manager. A fine hare, weighing 6 lbs. when drawn, may be bought for 3s., or even for 2s. 6d., and therefore at 6d. per lb. They are in season from August, when the leverets get very plentiful, until the following March, at which time the does are "in kindle," and the jacks as poor as rakes. The age of the hare determines its tenderness, and this may be known by the toughness of the ear, which readily splits or tears when young; by the hardness of the jaw when squeezed; and by the length of the claws, which are long and *blunt* in the old hare. The width of the back regulates the condition—a thin hare being a very poor article of diet.

717. **Rabbits,** both tame and wild, are sold in enormous quantities; and recently a new trade has sprung up to London from Ostend. Tame rabbits are kept in Belgium in great numbers for their skins, and their bodies, after stripping them of the skin, are brought over by the steamers and sold in London at the pork-butchers'—rarely at the poulterers'; why, I do not know. Some people like their flavour, but I confess that to me it smacks too strongly of the hutch to be pleasant. The price is about 8d. per lb. English tame rabbits, in good condition, are worth a trifle more; and wild rabbits about 1s. 6d. to 2s. per couple.

718. **The Chief Markets for Poultry and Game** in London, are those of Leadenhall and Newgate, where enormous quantities are sold; more than a million rabbits being now sold in London every year at these two markets alone. Hares, pheasants, and partridges are also sold there in profusion; the market being partly supplied by the poachers, and partly from the legitimate owners. Preserving is now carried on to so great an extent, that unless the game killed were sold, the expense would be enormous; and therefore the owner commissions his keeper, or steward, to dispose of it in this wholesale manner. Poached game is, however, much cleaner and better-looking, and the dealers prefer it, because it catches the eye of the customer in preference to game which has been shot and smeared with blood or dirt. Any one used to the state of properly-killed hares, may easily pick out the snared ones by their starting eyes and swelled heads, and the netted partridges by their unruffled plumage.

SECT. 6.—BUTTER, MILK, CHEESE, AND EGGS.

SUB-SECT. A.—BUTTER.

719. **Butter,** as intended for household use, is sold either as *fresh butter,* in which form it will barely keep a week; or *potted,* that is, made up with a little more salt, and enclosed in tubs or jars, so as to keep for a

month or even more, and called by a variety of names, as *Dorset*, *Welsh*, and *Ostend*; or thirdly of *salt butter*, which is mixed with too large a proportion of salt to be pleasant, but will keep for an indefinite time, gradually, however, becoming more and more rancid.

720. **Fresh Butter** is now sold all over England at prices varying much with the season of the year, being much cheaper in summer than winter. In London it is called either *Epping*, *Cambridge*, *Aylesbury*, or *Weekly Dorset;* but it is seldom that any butter sold in London really comes from the place with whose name it is identified. The difference in flavour is so small that the retail dealer is hardly likely to buy a quantity of each, and easily gratifies the fancies of his customers by providing them with a differently-named article from the same source, which is that from which he can suit himself at the lowest price, in proportion to the quality. All these butters are now sent to London daily, each dairy forwarding its churning as soon as it is fit to travel, and generally making butter twice a week. The Devon butter is made in a different way (see the next chapter), and the flavour is more creamy than those enumerated above; but it keeps so badly, and is so much damaged by railway travelling, that it is little used in London. The price of *genuine* fresh butter is seldom less than 1s. 6d. per lb. in London, and in the provinces ranges from that price to 1s. per lb. A vast quantity of potted-butter, and even of the better kinds of salt butter, is made up into pounds and sold as fresh butter. This is effected by washing out the salt and mixing a large quantity of water with it, by beating it up with great force by the hand. Milk is also sometimes used, but the great adulteration consists in the addition of water. Butter treated in this way tastes pretty well for twenty-four hours after it is purchased, but when kept longer than that time it turns rancid, and has a very disagreeable flavour.

721. **Potted Butter** is brought to London and the large towns from Dorset, Wales, Ireland, Holland, and Belgium, packed in firkins, from which the dealers profess to sell it as imported; but it is almost always taken out and washed, and then repacked before it is exposed in the shop for sale. Much of it is sold as fresh butter, at prices somewhat below the genuine *fresh*, whilst the butter which is called Ostend, and passes as the produce of the previous week's churning, is often at least a month or six weeks old, washed and made up with a quantity of water artificially introduced. Well-prepared potted-butter is very little inferior in flavour to fresh, and hence it is sold as such; and it is only the second qualities, and the salt butter prepared by washing, with the addition of a little soda, that are offered at the price of potted-butter. If potted during the autumn it will keep good through the winter, and many careful managers supply themselves in this way with a well-flavoured article at a low price. According to the analysis of Dr. Hassall, some samples examined by him contained 85 per cent. of salt and water; and Mr. Miller, a butter factor of London, asserts that 50 per cent. of water is often incorporated with the butter while in a melted state. This adulteration is easily detected by placing a few ounces of the butter in a six-ounce phial, and melting it slowly at a low heat, as in a water-bath at 180 degrees Fahrenheit, or on the hob of a common fire-place. In an hour or two the salt and water sink to the bottom and form a separate stratum below, the oily matter representing the clear butter, which, on cooling, becomes solid again, leaving the water and salt below with a milky tinge obtained either from the small quantity of milk left in most butters, or probably from the use of milk in washing and making up these fictitious butters. It has been asserted lately, that flint is dissolved in acid and added to butter as a means of adulteration; but this requires the corroboration of scientific experiment, and I should much doubt the fact.

722. **Salt Butter**, sold as such, is usually the refuse of the salt butter known by that name in the import trade, a vast quantity of which is exceedingly well flavoured, and readily passes, after a little ablution, for the qualities described under the last paragraph, and even sometimes for fresh butter at low prices. In order, however, for salt butter to be bought at the price allotted to it in the trade, it must be of some considerable age, as there is no motive for high salting, except to keep it from the summer to the winter or spring. Butter made during the summer months may generally be brought from Ireland, Holland, or Belgium to England within the time during which it will keep good, without adding to it more salt than enough to preserve it for the limited time that potted butter is expected to last good. It is true, that there are some remote districts of the countries from which butter is imported that cannot send their produce to market in less than a month; but these are the exceptions, and the great bulk of the salt butter is that made expressly for keeping some months, and thus realizing a high price for a bad article. The English and Irish salt butter comes to market in various kinds of packages; the English generally use a basket, called a *flat*, con-

taining about four or five dozen pounds, or a *box* holding about three hundredweight. The Welsh butter is potted or salted in earthenware crocks, which hold from fifty to eighty pounds. Scotch butter is sent to England in *firkins*, holding half a hundredweight; and the Irish butter is packed also in *firkins*, containing about three-quarters of a hundredweight, or rather more. Salt butter is sold at prices varying from 8d. to 11d. per lb., but it must be remembered that it *always* contains nearly a fifth part of its weight of salt and water, which materially takes off from its value, as compared with genuine fresh butter.

723. THE BEST MARKET FOR BUTTER in the provinces, is either in the open market, or very often a particular market-woman who passes the door. This kind of forestalling the market may be considered unfair, but it is very extensively practised, and saves a great deal of trouble to both parties, the price being regulated by the market-price of the day, so that no real unfairness occurs. The butter-shops are the only resource in London, as there is no retail market for butter, though there are some large establishments where such enormous quantities are sold, retail as well as wholesale, as to enable the proprietors to be satisfied with smaller profits than can be afforded by the common shops. Still, as butter travels badly, and is difficult to send home, it seldom answers to go far for this article of daily consumption, and the consumer must content himself with buying it at the best shop within his reach. For the winter, a cask of good Ostend butter, or Welsh, or Dorset, may be laid in, at a price depending upon the locality from which it is obtained, and whether purchased at the retail or wholesale price, and this will serve for all cooking purposes and for family use as well, by which a saving of nearly one-third may be effected—that is to say, if a check is placed upon its extravagant consumption, which servants are apt to indulge in when they have a whole cask to go to at their discretion.

724. MILK, like butter, is a perishable article, being in fact much more so, and only keeping for twenty-four hours in the summer season. It is brought into the towns from the adjoining grass-districts in large quantities, either by ordinary road-carriage or by railway. There is generally little choice to be had, and the person who has possession of the particular "milk-walk" is generally the only resource. Sometimes, however, there are rivals in this trade, and then there is a somewhat better chance of being well served; but, too often, the best milk which is to be procured is a humble imitation of that which comes from the cow. The consumption in London, Birmingham, Manchester, and the other large towns of England is enormous; and in London, if it were not for the railways, it would be almost impossible to supply its millions with this useful fluid. To the present day, a large number of cows are still kept in the immediate environs of London; but their ranks are thinned considerably of late years, partly from the increased value of the premises in which they are kept, but chiefly because it answers better to bring up the milk by railway. It matters not whether the cows are fed upon lucerne, mangel-wurzel, or grass, still these must be obtained from the land; and as the value of this increases in a ratio with its proximity to large towns, and especially in the case of London, it follows that the cost of keeping cows in or near London is much greater than at such a distance as can be reached in a couple of hours, or less, by rail. If the milk is not sent, the food must; and as the former is much less bulky than the latter when in sufficient quantity to produce an equivalent in milk, the cost of carriage is much less, and the cows themselves are housed at less cost, and are also much more free from disease. A London cow consumes half a hundredweight of green food (besides hay and grains, which may be obtained in London as well as elsewhere), and from this she produces, on the average, twelve quarts of milk; upon which quantity the railroad companies would charge 2½d., supposing they brought it forty miles, or if a greater distance, 3d. Now, it will at once appear that the increased cost for the above food and housing is much more than the higher of these sums; for no one will bring turnips, mangel-wurzel, grass, or lucerne to London from any distance for 6d. per cwt., they being all bulky articles, and costing considerably more by the time they are actually delivered at the cow-house. In the next chapter will be found a description of the methods of distinguishing rich milk from poor; but it must be remembered that all town-supplied milk is comparatively poor, being mixed more or less with milk from the "black cow." It appears that, in most cases throughout England, milk is worth to the farmers, for making butter and cheese, about 5d. to 6d. per gallon, and they therefore refuse to sell it wholesale under that price—which is the average of England—and yet it is rarely to be bought by retail anywhere for less than 2½d. a quart, or 10d. a gallon; and in most of the towns it realizes 3d. a quart, giving a profit to the retailer of cent. per cent., or still more in many cases, as in London, where it is sold at 3½d. to 4d. a

quart. But for this a horse and cart must often be kept; and when every expense, and, in addition, the chance of waste, are taken into the account, considering also the time occupied in supplying the customers, the profit is not so great as at first sight might appear. Milk is sold either in the state in which it comes from the cow, called *new milk*, or when deprived of its cream by standing, and then known as *skim-milk*. In London, only the former can be purchased, at least only of the quality known as new milk, and charged as such, though probably this is often entirely skim-milk, or at all events mixed with it to a great extent.

725. THE ADULTERATION OF MILK has always been considered to be very great—that is to say, it has been believed that not only water but other ingredients were added to milk in great quantities. Dr. Hassall, however, is of opinion that this is a fallacy; and from an examination made by him of twenty-six samples, purchased at various depots or dairies, it appeared that twelve were genuine, two deficient in cream, and eleven adulterated with water only. He states, "that in no case was chalk, size, gum, sheep's brains, or any substance said to be occasionally used for the adulteration of milk, detected." If, therefore, there is no other fraud committed than the adulteration with water, the consumer has only to examine for himself with the instruments described in the next chapter, and then he will of course select the best milk within his reach. Water adulteration is bad enough, but it is far better than that which has been generally supposed to be commonly adopted in the milk-trade.

SUB-SECT. B.—CREAM.

726. Cream is the oily part of milk uniformly diffused through the whole fluid as first drawn from the cow, and only separating by standing, after which its lesser specific gravity draws it to the surface in a definite layer of greater or less depth, according to the quality of the milk. When new milk is placed upon a stove in deep pans, the cream separates still more completely, and is then called *clouted* or *clotted* cream, or sometimes *Devonshire cream*, the county of Devon being the chief seat of this method of management. Ordinary and clouted cream are both to be purchased in London, though the latter is only to be met with in particular shops; the price, however, is much above what a corresponding quantity of butter would fetch, and this arises from the difficulty of carriage, as it soon becomes butter by travelling, if it is not carefully enclosed in vessels quite full, so as to exclude the air. The price in London is generally 2s. per pint for cream of good quality: and clouted cream, which is packed in tins, at nearly the same rate per lb. The ordinary quality of cream is however, very poor, and little above that of good country milk.

SUB-SECT. C.—CHEESE.

727. This valuable article is made from milk, either *new* or *skim*, or the former with the addition of *cream*. The method of manufacture will be found given in the next chapter; and what we have now to consider is the article as offered in the shops. Great variety is sold of English, Irish, Dutch, and American make, besides some few more rare specimens of Swiss and French manufacture. The following are the chief makes as distinguished in the shops, viz.:—Stilton, Cheddar, Cheshire, Wiltshire, Derbyshire, Gloucester, Irish, Scotch, Dutch, and American, the two last being again known in the trade by distinguishing marks and names, as Gouda, Edam, &c. Some of these, as the Cheshire, Cheddar, and Derbyshire, are more or less coloured with annatto or carrots; but the bulk of the English and foreign cheeses are now unstained by that silly attempt at imparting a rich or creamy colour. All the above cheeses are made of new milk, either by itself or mixed with cream, as in the case of Stilton, which has a considerable addition of the latter. The price varies from 1s. 6d. or 1s. 8d. per pound for Stilton down to 6d. or 7d. for American and Dutch, of which some specimens are almost equal to our own much-esteemed products of the rich fields of Leicestershire and Nottinghamshire.

728. CREAM CHEESE AND NEW CHEESE are both made with the intention of their being rapidly fit for consumption. The former is not generally worthy of the name it bears, being made from new milk rather than cream. (See next chapter.) It requires to be kept about a week before it is fit for use, the time varying according to the taste of those for whom it is intended. As sold in the shops, it is usually very full of whey, and if this is allowed to remain at the bottom of the cheese it speedily becomes decomposed and unfit for use, but by shifting it from dish to dish daily and keeping it in a cool place the bottom remains dry, and the cheese becomes uniformly mellow. It is a very wholesome article, and is in great request in the summer to eat with radishes and other salads. It is called *rush cheese*, *Bath cheese*, and *cream cheese*, indiscriminately; but the *cream cheese* of Devonshire is made of cream and new milk mixed together, and is a much richer article, being in fact little more than clouted cream

mixed with a small proportion of curd. *New cheese*, as brought to London and other large towns, is nothing more than a rich cheese of the ordinary make, pressed in a very thin layer of about one inch in thickness, and sent to market before it is more than just settled into the condition of cheese from that of raw curd. This kind is also wholesome to most strong stomachs, but not so light as the ordinary cream cheese.

729. STILTON CHEESE is made of rich new milk from the best dairy districts, with the addition of more or less cream. It requires keeping for about eighteen months or longer, if it is desired to have it very ripe. The blue or green mould of this cheese, joined to a very high flavour, and rich, yet not tough consistence, are the chief good qualities to be sought for. There is a great range in price proportionate to age and quality, and as it is considered the best cheese made in this country, it is natural to suppose that the dairies which produce the "*la crême de la crême*" should command a high price. It is, however, difficult to foretel how new stilton may turn out on ripening, and therefore the buyer will do wisely, unless he knows the character of the dairy from which it comes, to postpone his purchase, and to buy only the cheese in a state fit for the table. The price is a little higher in proportion, but then it will always give satisfaction.

730. CHEDDAR, DERBYSHIRE, AND WILTSHIRE CHEESES, as well as many of the Gloucestershire make, are very different in flavour to those made at Stilton, or called by that name. They are much stronger and more full of pungency, so that a smaller quantity serves the purpose; and they are also lower in price, seldom rising above 10d. or 11d. per lb., even of the best quality. They are almost always made in thick cheeses, but they vary in diameter very considerably; the Cheddar, Cheshire, and Gloucester being large, and the Derbyshire and some of the Wiltshire small.

731. THE IRISH, DUTCH, AND AMERICAN CHEESES vary immensely in quality, in flavour, and in size. Some of the Dutch and American resemble one another closely, being large and rich, without colour, and making capital toasted-cheese. The American cheese is made and pressed in such a careless way as to be generally full of holes, by which the air is admitted to it in an unripe state, and the consequence often is, that it becomes partially sour. If this could be avoided, many of their cheeses would compete successfully with our Stiltons — of all but the very first quality, which are, as yet, unapproached in their peculiar good features by the cheese of any country whatever, as far as my experience goes. The round Dutch cheeses are generally very hard, poor, and dry; but some are exceedingly high flavoured and rich, and almost equal to Stilton in every respect. These however are rare exceptions, and no one in buying one at an ordinary shop can expect to be favoured with such an article at the low price at which they are sold, which is often half that of good English cheese.

732. THE ORDINARY ENGLISH HOUSEHOLD CHEESE is made from a mixture of skim and new milk, varying a good deal in the proportion of the latter, and also in its quality. In some counties the cheese is almost all made from skim-milk alone, and is then hard, dry, and indigestible. This cheese will not melt by heat, but shrivels up and becomes hard and unfit for the stomach.

733. PARMESAN, GRUYERE, AND NEUFCHATEL CHEESES are little used in this country, and scarcely require a detailed description.

734. CHEESE is not adulterated to any extent, the only article mixed with it being the annatto for the sake of colouring.

735. IN BUYING AND SELECTING CHEESE by retail, it is usual for the purchaser to taste the various samples, the seller using a *taster*, which is a long semi-cylindrical scoop of iron, thrust into the cheese and bringing out a long plug of it, the end of which is used for tasting, and the remainder with the rind is afterwards taken out of the taster and pushed into the hole made by it, so as to exclude the air and preserve the appearance of the cheese. In this way every cheese is offered to the retail buyer; but in the wholesale trade the sense of smell and the effect of a hot iron are the only agents employed, some cheese-brokers never by any chance admitting cheese into their mouths, alleging that the so doing would destroy their powers of discrimination. The sense of smell is undoubtedly less easily imposed upon and surfeited than that of taste, and this may be one reason why they adhere to it in preference to the palate. Good and experienced housekeepers, who have convenience for keeping cheese, and live near a dairy district, generally lay in a stock in the autumn to last the whole year, because the farmers then send their produce to the cheese fairs; but those who live in towns cannot do this, and they generally buy a quarter or half a cheese at a time, and then it should be fit for use. When more is bought than is absolutely wanted at the time, the part not required for use should have a piece of buttered paper tied over the cut part, and the whole should then be wrapped up in

thick brown paper and deposited on the stones or bricks of a cellar, with an earthen pan inverted over it to keep off the attacks of mice, &c.

SUB-SECT. D.—EGGS.

736. EGGS are so generally wanted in housekeeping, that it is very important to be able to obtain them in a state fit for use. It is therefore desirable to buy them when fresh laid, if it is possible to be certain of this, and lay them by for future use, preserving them by the process mentioned in the next chapter, under "Poultry." But this method is now so well understood and practised by the dealers, that in all respectable shops tolerably sound and useful eggs may be purchased at all seasons of the year, though not fit for breakfast use. A great proportion of our eggs are imported from France, about one hundred millions crossing the channel every year. Really fresh-laid eggs are rarely to be met with in the shops of London, although many people warrant them as such; but the difficulty in meeting the demand is so great that it is no wonder, in these days of substitution and adulteration, that an egg only a month or two old is passed off for a much younger brother. The flavour is somewhat different, but the thing is the same, and so the seller quiets his conscience more easily, perhaps, than the man who vends wine which has never seen the sea, as the produce of Spain, Portugal, or Germany.

737. IN CHOOSING EGGS, it is usual to test the freshness by putting the large end to the tongue, when, if it feels warmer than the other end, the eggs are considered fresh. This depends upon the bubble of air being a bad conductor of heat, and holds good as between an addled-egg and a sound one; but I doubt whether any one by this test alone could distinguish a new-laid egg from one a month old. As long as the vitality of the egg remains and the air vesicle is entire, so long will the warmth be apparent; but when this ceases, the air vesicle shrinks, the two ends assimilate, by the development of another at the opposite end, and the test no longer applies. New-laid eggs can only be selected by the *bloom* on the shell, which to a practised eye is apparent, and which is destroyed by oiling or immersion in lime-water, but not by packing in bran. Therefore it is also to a certain extent fallacious, as carefully-packed eggs kept for a month, or more, in bran will look very inviting, and yet be stale to the palate. There is, in fact, no certain test, and the character of the vendor is the sole guide in this kind of marketing. Country eggs may generally be bought at the farm, or cottage at a little more than one halfpenny a-piece—say 18 or 20 for a shilling, during the spring and early summer. In London, and other large towns, during the winter they are from 8 to 10 a shilling.

SECT. 7.—FISH.

738. GENERAL REMARKS.—Fish form a most important article of diet, not only for the invalid, but for all those in sound health who require some little change in their daily food. It is certainly not so strong and nutritious as butcher's meat, or even poultry, but many kinds are sufficiently nourishing to preserve health, in conjunction with potatoes and meal; and when taken alternately with meat or bacon, fish seems to agree remarkably well with most constitutions. In our summers, and in warm climates, fish is particularly well suited to the wants of the system, inasmuch as it contains less stimulating properties than butcher's meat; but, at the same time, it must not be forgotten that it requires a larger quantity of it to satisfy a hearty appetite, and that being rapidly digested it will not "stay" the stomach long before the next meal. Fishes have been used as the food of man from the earliest ages, and Aristotle and Pliny wrote elaborate treatises on their characters and habits. Since their time, however, many succeeding writers have developed our knowledge of the structure of these creatures, and they are now arranged in natural groups according to their internal formations. All true fish have cold red blood, with a skeleton either of bone or cartilage; and they all renovate the oxygen in the blood by means of gills, which bring that fluid into near contact with the air contained in the water they inhabit. They live but a short time out of the water, though some, as the eel and carp, can maintain life in the air for a considerable number of hours. The composition of the skeleton is one chief ground of subdivision, inasmuch as one division or group have bony, and the other cartilaginous, skeletons. These, again, are subdivided to an enormous extent, by various distinguishing traits, as, the existence or not of the gill-cover, which separates the cartilaginous fishes into two sections, including in those which want this addition the lamprey, lampern, skate, and shark, whilst the eel and the sturgeon possess it tolerably well developed. The bony fishes are divided into orders, from the situation of the fins, which with the tail are their only organs of motion. These vary their position in a remarkable manner, as, for instance, in the eel-pout and haddock, which have the ventral fins placed before the pectoral,

whilst they are directly under them in the bream, the perch, and the mackerel, and behind them in the salmon, pike, herring, and carp. The muscles of fish are somewhat different from those of warm-blooded animals, consisting of white or pale layers of fibrous tissue, of a thicker texture than those of mammalia, and having between them layers of a white gelatinous substance, which rapidly decomposes after death. The brain and nervous system are small in comparison with the size of the body, and the ganglia are very much separated from one another; hence, it is argued, with some degree of probability, too, that they are not capable of feeling so acutely the lacerations and other injuries to which they are subjected; and this is a very important point for consideration when it is remembered how some of them are cut in crimping, others skinned alive, like the eel; others, again, are boiled to death, by putting them first in cold water, as is done with the lobster and crab, to prevent them throwing off their claws. The organs of seeing and smelling seem perfect enough, but the senses of taste and hearing are at a very low ebb, none but the cartilaginous fishes having even an external opening to the ear at all. Most of this tribe lay their eggs by spawning, which are afterwards hatched, and produce young fish; but some of the cartilaginous fishes are viviparous. Their productive power is very great; some, as the codfish, having been known to contain nearly a million and a half of eggs.

739. For the purposes of human food, fish may be considered under five heads—1st, *river fish*; 2nd, *pond fish*; 3rd, *sea fish*; 4th, *shell-fish*; and, 5th, *dried and salted fish*.

SUB-SECT. A.—RIVER FISH.

740. IN THE USE OF RIVER FISH, more perhaps than in any other, great waste is committed, arising chiefly from the fact that the young fry are much more easily captured than their older and more wary progenitors. From the boy with his willow rod to the poaching fisherman with his fine meshed net, all but the real and fair sportsman conspire to destroy river fish long before they arrive at full maturity, either of size or flavour. It is now at last discovered that it is necessary to take some care of these defenceless young animals, and hence the numerous conservative associations which have been formed all over the land, in many cases with a most gratifying result. In addition to these means an attempt has lately been made to breed fish artificially, but it is so completely in its infancy that it is scarcely fair to form any opinion as to its advantages in an economical point of view. Our present purpose is to describe those fish which are offered for sale in our fish-markets, or sometimes only at the places near where they are caught. The list is not a very long one, comprehending: 1st, the *salmon*; 2nd, *salmon* or *sea-trout*; 3rd, the *bulltrout*, *sewen*, or *whitling*; 4th, the *common trout*; 5th, the *grayling*; 6th, the *pike* or *jack*; 7th, the *bream*; 8th, the *roach*; 9th, the *dace*; 10th, the *barbel*; 11th, the *gudgeon*; 12th, the *perch*; 13th, the *ruffe* or *pope*; 14th, the *flounder*; 15th, the *eel*; 16th, the *lamprey* and *lampern*; and, 17th, the *shad*. The parr, minnow, loach, stickleback, bullhead, and bleak, are river fish, but are not fit for the table, either from their want of size or flavour. The sturgeon, rudd, and azurine, are too rare to need description here.

741. THE COMMON SALMON is by far the best flavoured of all river fish in the estimation of most people; it is of great size, sometimes weighing 50 lb. or even 60 lb., and of beautiful proportions. It is not confined to rivers, but migrates to the sea during a portion of every year. The head is small; upper jaw longer than the lower; vomer furnished with teeth; body slightly arched on the back, which ought to be broad and muscular, and gradually tapering to the tail, which is broad, and ends in a crescentic curve. The colour of the salmon, when in season, is a purplish black on the back, softening into a silvery gray on the sides, and ending in a pure white on the belly. The male has several small irregular and copper-coloured spots on his sides; these in the female are generally larger, darker, and more round or lunated. The male is also more slender. The scales are of middle size, very silvery, and easily detached. The average length is from two to three feet. Salmon feed greedily on fish and mollusca, and digest their food so rapidly that when opened their stomachs are generally found empty. Their growth is proportionate to the quantity of food which they can procure, and when they reach the sea, where it is abundant, they increase in size in a marvellous manner during a very short period. The successive stages of development are as follows:—The fry are hatched chiefly in the spring and early summer, though some few appear to be produced at almost all seasons of the year; they grow slowly till they are a year old, up to which time they are called *salmon-fry*, and have several transverse bars on the sides resembling those of the parr, which, however, appears to be undoubtedly a separate and distinct fish. When these bars disappear, and the young fish becomes uniformly silvery in colour, it is about to commence its first

migration to the sea, and is called *a smoult*. When the smoult has entered the sea it remains there from two to four or six months, increasing rapidly from a few ounces in weight to two or three pounds, and being then called *a grilse*, in which condition they re-ascend their native rivers, if possible, and after abiding there till the next migration (during which time they often, but not invariably, spawn), they again descend to the sea, and acquire a second rapid increase in weight and size; after which they arrive at the full honours and dignities of their tribe with the name of *salmon*. Their size, however, does not entirely depend upon their age, but partly upon the stream in which they were spawned, some rivers never producing large salmon, while others are remarkable for them. The *fence months*, when it is illegal to take salmon, vary in the different rivers; but in most of them that time extends from the 10th of September to the 25th of January, and during those months as well as for some time after, the fish which may be offered for sale are spent after spawning, and not fit for human food. These may be known by their lantern jaws, narrow backs, and general look of flaccidity. Salmon are brought to the London market from the rivers of Scotland, Ireland, and Norway packed in ice, and some few from the Severn and Wye. The flesh is of a rich yellowish-pink colour, very full of condensed albumen when crimped, which is a practice very common in this fish, and which is effected by scoring the fish deeply to the bone at intervals of about two inches apart, after depriving it of sensation by a blow on the head. It is then placed for about twenty minutes in water, and when boiled its consistence is quite different to the oily and rich flavour of the ordinary "flat" fish. The retail prices are sometimes as low as 7d. or 8d. per lb., at which price it is a tolerably economical article of food, being free from bones, and very satisfying, and full of nourishment, but not very digestible to a weak stomach. The average price, however, is about 1s. 6d. per lb.

742. SALMON OR SEA-TROUT, is only distinguished from the true salmon by the formation of its gill-cover, and by the teeth, which are more numerous and slender. The flesh of this fish is very similar in flavour and colour to that of the common salmon, with which it is generally confounded, as the two are sold indiscriminately as "salmon" by the fishmongers of England. They are also alike in breeding, migrations, and other habits.

743. THE BULLTROUT, SEWEN, OR WHITLING, is also chiefly distinguishable by the gill-cover from the preceding species, the teeth also being larger and stronger. This variety is found in several of the rivers of Wales, Devonshire, and Cornwall. In weight it is rarely above 16 lbs., and its flesh is paler and of less flavour than that of the common salmon and salmon-trout.

744. THE COMMON TROUT is distinguished by having its lower jaw longer than the upper. It weighs from half a pound, or less, to four or five, or even in rare cases to eight or nine pounds. Its ordinary length is from 10 to 18 or 20 inches. In shape it is not so elegant as the salmon, but it is nevertheless a very beautiful fish. The snout is more blunt, and the jaws are thickly supplied with teeth inclining inwards, and very sharp. In colour it is of a pale yellowish-gray, darker on the back, and nearly white on the belly. It is marked on the sides with several distinct round spots of a bright red colour, each surrounded by a halo of pale gray; occasionally a black spot occurs, especially on the fins. These are of a purplish-brown colour, except the ventrals, which have a reddish tinge. Trout vary so much in the different rivers, that no minute description will apply to all, but the above gives the general characteristics of the species. The trout resembles the salmon in all its habits excepting only its migrations to the sea; it is in full season from March to July, but the time varies in different rivers so much that it is impossible to lay down an invariable rule. When in high condition the spots are peculiarly brilliant and distinct; the head is small, the body being plump and thick, and the belly silvery. The flavour of this fish is highly valued, but it is not to be compared with the salmon, and it is objectionable to many people on account of its bones, though these are not so troublesome as the bones of the herring or of many other fresh-water fish.

745. THE GRAYLING is found only in certain streams, and more particularly in those descending from granite mountains. It is a very elegant fish, of middle size, seldom exceeding 15 or 16 inches in length, and slender in proportion; though in some few cases graylings have been taken of from four or five pounds weight. The head is small, the upper jaw the longer of the two; teeth small and spread over the roof of the mouth; the colour of the back varies from a blackish-green to blue, gradually shading into a silvery-gray towards the belly. When first taken there are several black spots on the back, and some irridescent patches of gold colour on the sides, which appearance rapidly fades, and the general colours soon sober down after its capture and removal from the water. The scales are large in proportion to its size. The

season is from September to March, after which they begin to spawn. They do not bear travelling or keeping with impunity, and can only be eaten in perfection within a few miles of their native rivers; but they are then of very delicate flavour, and are considered by many people to be superior to trout.

746. **THE PIKE, OR JACK,** is a very voracious fish, met with in the gently-flowing rivers and ponds of Great Britain. It is called a pike when above four or five pounds in weight, and a jack if of less than that size. This fish is very ugly-looking, the head being large, the jaws long and savage-looking, and armed with several hundred teeth: the tail is lunated; colour, a pale olive-gray, becoming deeper on the back, and marked on the sides with several yellowish spots or patches. Sometimes the pike reaches an enormous size, instances having been known in which it was taken more than three feet in length. The food of the pike consists of fish, frogs, rats, the young of waterfowl, or in fact anything in the shape of animal food. They spawn, in March and April, among the weeds of their favourite haunts. Like all other fish, they are only in season for the few months before this process is commenced. The flesh is white, and of a good flavour, resembling the haddock, being, when stuffed and roasted, a dish fit to be placed before even an epicure.

747. **THE BREAM** is more like a flat-fish than any other fresh-water fish except the flounder. It is very narrow across the back, which, as well as the belly, is much arched, forming altogether almost an oval. It frequents still water, like the pike, and is often in the same rivers and ponds. The head is very small, with a pointed snout, small mouth, and no teeth. The colour is bluish iron-grey on the back, inclining to white on the belly. The bream is rarely above a pound and a half weight, and is not highly prized for the table, though when stuffed and roasted like a pike it is not to be despised.

748. **THE CHUB,** also called the **CHEVIN** and the **SKELLY** in the different counties of England, is a powerful fish, very timid in its nature, and retreating to the deepest holes of the river in which it is found on the slightest appearance of danger. In weight it is from one to four pounds; in shape, short, thick, and high-backed, with large scales; in colour it is greenish-brown on the head and back, silvery-brown approaching to yellow on the sides, white on the belly, pectoral fins yellow, anal red, tail of a reddish colour and forked. The chub spawns in April, but very soon recovers from that process, and is in season again in June. It frequents deep rivers running through alluvial districts, and lives chiefly upon worms. Its flesh is not of very high flavour, but when stewed in rich gravy it makes a very savoury dish. Nevertheless it is not generally in high repute for the table.

749. **THE ROACH, OR BRAISE,** inhabits the same kind of rivers as the chub, and is a gregarious fish. It has a small round leathery mouth, provided with a circle of teeth placed in the throat. It is as deep, but not so thick, as the chub; scales large; colour of a pale golden tinge, approaching to brown on the back; fins red, as also is the iris. The flesh is tasteless and full of bones, and the fish is not valued for the table, though perfectly wholesome.

750. **THE DACE, OR DARE,** is also a gregarious fish. The head is small, body slender, tail forked; colour, dusky on the back, varied with patches of pale olive-green, sides and belly silvery, fins reddish, but not so much so as the roach. It is about nine or ten inches long; its haunts are unlike those of the roach and chub, inasmuch as it prefers swift and gravelly streams, but selects those which are thickly infested with weeds. It is very generally found in the rivers of England, but is not highly esteemed for the table, being devoid of flavour and full of bones.

751. **THE BARBEL,** so named from its beard, which consists of four distinct prolongations, two on each side of a very prominent upper lip, frequents deep but rapid rivers, and is a gregarious fish, feeding on insects and worms. The colour is a silvery-grey, being darker on the back, and white on the belly; scales of middle-size, and rounded; dorsal fin small, and of a bluish-brown; other fins brown, tipped with yellow; tail forked, and of a purplish-brown. The flesh is capable of being dressed to advantage, but under the ordinary arrangements of cookery is tasteless and poor.

752. **THE GUDGEON,** though small, is highly prized for its good flavour. It is gregarious, and is taken in immense numbers in the neighbourhood of London, not only in the Thames, but in the other rivers of Middlesex and Surrey. Gudgeon rarely come to the surface of the water, but frequent the bottoms of rapid shallows with a gravelly soil. This fish has a small beard on the upper lip; it is about five or six inches long, with a round body and a thick head. Colour, pale-brown on the back, and reddish-white on the belly; fins slightly tinged with reddish-yellow, the dorsal and tail-fins being spotted with black.

753. **THE PERCH** is a very handsome fish, of medium size; body deep, with high

arched back; head small, with sharp teeth in the jaws and the roof of the mouth. The edges of the gill-covers are serrated with a spine on the lower part. Colour, as follows:—Back, deep olive-brown, with broad black bars gradually becoming white towards the belly; ventral and anal fins of a rich scarlet, as also is the tail, though not so distinctly of that colour. The dorsal fin is furnished with spinous prolongations, so sharp that it can scarcely be handled with impunity. It thrives best in large tidal rivers, where it prefers the point at which the water is usually brackish, and grows there to an extent never seen elsewhere. In stagnant ponds it will live, but does not thrive. It is a slow-growing fish, requiring many years to arrive at its full size; it spawns in March and April. The perch is a gregarious fish, very tenacious of life. and its flesh is full of flavour and also of bones, which are, in fact, the great drawback to the enjoyment of all small river fish.

754. **The Ruffe, or Pope,** is generally considered to be a variety of the perch, but it differs from that fish in colour, being of a dusky olive with black spots; and in its generic and anatomical arrangements. It is very abundant in the Thames, but is not prized as an article of diet, being chiefly confined to the tables of the poorer classes, to whom it is sold at a very low rate.

755. **The Flounder** is met with in the Thames in great numbers, being a flat-fish of moderate size, and seldom reaching to more than two pounds in weight. The upper part is of a dirty brown, with a few dusky-yellow spots; belly white. It has a row of sharp small spines surrounding the body, and between it and the fins, by which it may be distinguished from other flat-fish. It is highly valued for making the dish called *water-suchet*.

756. **Of Eels** there are three varieties met with, the distinction merely depending upon the length of the noses. In length they are from one to three feet; colour, on the back, varying from a dark olive to a light brown; belly always white and silvery, especially in the silver-eel, a variety peculiar to some rivers. Head flat, and jaws more or less elongated, but the lower jaw always the longer; eyes very near the mouth, and small, with a reddish iris; gill-opening set far back, and close to the temporal fin. The eel is now ascertained to spawn in the sea, for which purpose it descends from its usual haunts, and visits the ocean. It has the power of overcoming all obstacles, because it can leave the water, and, by its serpent-like form, travel over or round any flood-gate or mill-dam in its course, whether up or down stream. It generally chooses dark stormy nights for this purpose; and its migration downwards takes place in the months of August, September, and October, during which time eels are taken in large numbers by the millers throughout the kingdom, who set their nets at the chief water-courses. Eels are generally considered to be viviparous; but they seem, like many other animals, sometimes to produce their ova already hatched, and at others to eject them with their contents still in an embryo state. The young first appear on the coasts in March and April, and are then seen in countless myriads. They soon ascend the rivers, and by various devices they surmount the flood-gates and weirs, which impede the progress of other fish; sometimes the millers put straw-ropes to assist them, up which the young eels swarm in great numbers. While ascending the larger rivers, they may be seen in double columns, one close to each bank, swimming with great power and speed. They are then from half an inch to an inch in length. The eel is a very voracious fish, feeding upon all kinds of garbage, and upon small fish, frogs, rats, &c., chiefly by night. During the day it lies under stones, or stumps of trees, or in the mud, and can seldom be seen. It is a most delicious fish, rich, and yet easy of digestion, and second in flavour only to the salmon among the river fish.

757. **The Lamprey and Lampern** both belong to the cartilaginous fishes, and instead of the ordinary gills, they have seven openings on each side of the head, which allow of the escape of the water by means of which they oxygenate the blood. The lamprey is in general appearance very like the eel; but instead of the flat mouth which that fish exhibits, the lamprey has a sucking apparatus by which it attaches itself to stones, roots of trees, or piles, and then lies with its body quite at rest, except as moved by the current. It is capable of swimming with considerable velocity, and migrates from the sea to certain rivers, which latter it visits in the winter and spring, and returns in the summer to the sea. It is in high season in March, April, May, and the early part of June; and it is then taken in considerable numbers in the Severn, and more sparely in the Thames. It is highly prized as a dainty, and is generally stewed or potted, requiring the addition of strong spices to make it fit for a delicate stomach. The price is generally about 2s. to 2s. 6d. per lb. *Lamperns*, though similar in conformation, are much smaller, being seldom more than a foot in length, and in diameter about a third to half an inch. They also visit the sea, and are

found in large numbers in the Severn and Thames, in which latter river they are eagerly sought for by the fishermen to serve as a bait for other fish. The price is generally about half that of the lamprey, or sometimes very much less, lamperns being usually sold by the score.

758. Shad are migratory fish, which enter some few rivers, as the Severn and Thames, for the purpose of spawning, and are only in season for about a fortnight, that is just before performing that duty. They have a good deal of the flavour of mackerel, with the richness of the salmon, and when eaten in good condition are very much admired by, and well worthy the attention of, the epicure; but after this they are poor and devoid of all flavour, so that large quantities are sold at nominal prices to the poorest inhabitants of the low districts near the Thames.

759. These River Fish, with the exception of the salmon, eel, lamprey, and flounder, are not generally to be met with at the stalls of the fishmonger; and if they are desired, they must be sought for at the cottage of the nearest fisherman. They are seldom to be obtained at a price which renders them as economical as sea-fish, nor are the bulk of them very desirable in any point of view. The salmon and the eel are, however, exceptions, and equal any sea-fish in their nutritive qualities, whilst they are superior to most in flavour. When these can be obtained at low prices, they are worthy the attention of the caterer, and should be sought for with avidity, taking care that too much at a time is not eaten by those who are not able to digest such rich aliment.

Sub-sect. B.—Pond Fish.

760. The above class of fish are met with in ponds and other still water, as lakes and torpid rivers, but do not thrive well in any situation where they are exposed to rapid changes of water, as in quickly-running streams. These fish may be reared to a proper age in ponds, where they may be kept till they are wanted; and as they are generally only there preserved for the use of the proprietor of the water, and can be taken at any time by the net cast and drawn through the pond, they very seldom find their way to the fishmongers' stalls. Hence, they scarcely come under the head of articles bought at market; but as they are the only exception, it is scarcely worth while to separate them from this division of the subject. They consist of:—1st, the *great lake trout;* 2nd, the *char;* 3rd, the *gwiniad, powan, venduce,* and *pollan;* 4th, the *carp;* and 5th, the *tench.*

761. The Great Lake Trout resembles the salmon in all respects but its migrations to the sea; and even in size it nearly approaches that magnificent fish. Its flesh, however, is not quite so well-flavoured, and is of a paler colour. It is found in the Scotch lakes, and is highly valued in that country as a table delicacy.

762. The Char is known as the *silver char*, the *gilt char*, the *red char*, and the *case char*, according to the peculiar shade of the colour, which varies much in the different lakes of Scotland and Ireland, where only it is found. It is a beautiful fish, of medium size, and very delicate flavour, but from its rarity it does not often appear at table.

763. The Gwiniad, Powan, Vendace, and Pollan all belong to one genus (*Coregonus*), and are each peculiar to certain lakes in Ireland and Scotland, and also to those of the north of England. The first is common to all; the second is found only in Loch Lomond and one or two other Scotch lakes; the third is met with generally in Scotland; and the fourth is peculiar to Lough Neagh, in Ireland. They are all nearly allied to the *salmonidæ*, but have prolonged snouts resembling the herring, from which circumstance the gwiniad is also called the fresh-water herring. They are taken with the net, and are highly esteemed as articles of food.

764. The Common Carp, though now universally met with in the ponds of England, is not a native of this country, but was introduced by the monks to serve as an article of diet allowed to them during their fasts. In length it is usually from one foot to one foot six inches. The back is arched and thick; colour yellowish, approaching to brown over the back, and to white under the belly, with some blackish specks on the side. The mouth has a short beard on each side, both above and below. Fins and tail brown, the latter being forked. The carp feeds on worms and insects, and lives to a great age, being also very prolific. It is a fish which requires good sauce to make it palatable, but when well dressed it will tickle the fancy of others besides those who originally appropriated it to themselves. The *crucian* is only a variety of the common carp.

765. The Tench, like the carp has been naturalized in this country from abroad, having been introduced for the same purpose. It is a thick fish, resembling the carp in shape, and having a small thin beard at each corner of its mouth. Like the carp, it has no teeth. Gill-covers, bright yellow; body, deep olive, with a tint of gold; scales small, and covered thickly with a viscid slime. Fins of a dark purplish-brown; tail square. The tench spawns in

the spring among the weeds of the ponds, in which it rejoices, and the young fish grow rapidly, so that a pond is soon stocked with them. The flavour is very superior to carp, and is equal to any fresh-water fish but salmon and eels, not even excepting trout or grayling. The skin is very gelatinous, and is considered to resemble that of the turbot in flavour and consistence.

766. These fish, as I before remarked, are seldom to be purchased at the fishmonger's, and they must be obtained, if wanted, either by preserving in a pond, or other piece of artificial water, or by taking the trouble to obtain them from those who have such a convenience. In secluded country districts where sea fish are scarce, and where fish of some kind or other is considered indispensable, as, for instance, in Catholic families, the carp and tench supply a want which it is otherwise very difficult to comply with. By obtaining the command of a moderately large pond, they may be reared and fed so as to serve as a regular diet when wanted; but this can only be done by making a succession of fish-ponds, commonly called stews, so as to avoid disturbing the breeding-ponds on every occasion when the net must be cast. But by setting apart one or two small stews, as they are called, and then dragging or letting off the water from the principal ponds once or twice a year, the large fish may be taken out and placed in the stew until required, leaving the small ones and the breeding fish till another year, or even longer. If these fish are kept in any number in a small piece of water, especially if the surrounding land is poor, and there are few worms and other insects, a supply of artificial food must be afforded, consisting of bread and greaves, or barley-meal and greaves boiled into a thick and strong pudding, and then cast into the water in irregular lumps of the size of an orange, at intervals of a day or two. If this is regularly done, the fish become very tame, and will even come and feed out of the hand.

SUB-SECT. C.—SEA FISH.

767. THESE denizens of the sea are of far more importance to the housekeeper than the various river and pond fish, which have been described in the previous sub-sections. Some of them form very economical articles of diet for all classes, and are also advantageous to health when used alternately with meat; or when employed alone by the very poor, they may be considered as superior to potatoes and buttermilk, and as constituting a good change from oatmeal porridge. Sea fish are now brought to all our large cities in immense quantities, and London is supplied from a variety of sources with hundreds of thousands of tons per annum. Indeed it is notorious, that in the metropolis fish may be generally bought more cheaply than at the sea-side where it is caught, unless there happens to be such a glut there that the means of carriage are not at once available. Billingsgate is the only wholesale fish-market in London, and it is now tolerably well adapted to the object for which it is intended, having been rebuilt in 1851-2. It consists of two stories, an upper one level with Thames-street, where the ordinary kinds of fish are sold, and another beneath this devoted entirely to the sale of shell-fish. Here all the fish intended to supply at least four millions of people is daily offered for sale, beginning at three o'clock in the morning, and the market being over by eight, or nine at the latest. The fish are consigned to salesmen, who fix the price according to the supply, and also to the demand, and thus on two consecutive days the same kind of fish may vary at least 100 per cent. The four millions above alluded to comprise the population of London and its suburbs, and also the many inland towns of the south of England, which depend upon Billingsgate for their fish supply. A great proportion of these fish is brought up by rail, chiefly by the Eastern Counties line, from the Yarmouth district; but the others also contribute their quota, the Great Western conveying large quantities from the Devonshire and Cornish fisheries. These have all to be conveyed in vans from the stations to Thames-street, where they may be seen in the early morning blocking up the entire street. On the river side, again, are to be seen every variety of small rowing and sailing boat disgorging its cargo, and some of them selling their fish direct to the retailers without the intervention of the fish-salesmen in the market. Peter-boats, smacks, barges, wherries, and even steam-vessels crowd the wharf, and the apparent confusion is beyond the conception of those who have not witnessed the scene. With so perishable an article, and so short-lived a market, great exertions must often be made to reach the scene of operation; and as the sailing vessels are often unable to manage the feat, they employ a set of watermen to row up their cargo in large wherries from the point where they think it necessary to make up their minds to the extra expense incurred by a shift of wind. These men sometimes row from forty to fifty miles in one tide, with a deeply-laden boat; and in order to do this must, during a part of this work, face a strong stream running against them. It is therefore a wonderful effort; but from long habit they

are able to effect what to most men would appear beyond the powers of the human body. The fish, whether brought by railway or boat, are from widely-separated fisheries. The cod-fish are from Holland, Norway, and the coast of Yarmouth; as also are the turbot, brill, sole, plaice, skate, haddock, and whiting. Mackerel come from Devon and Cornwall; herrings and sprats from various parts of the coast, according to the season, but chiefly from the eastern coasts. Dover is celebrated for its soles, but few of those called by that name are really from that limited locality. Shell-fish do not all come from the same coast, oysters being brought from the Thames and the Channel, lobsters from Norway and the coast of Scotland, crabs from the south coast, and shrimps and prawns from the estuary of the Thames and the south coast of Devonshire. These fish are kept alive in wells made in the vessels which bring them, and those which are otherwise conveyed are kept fresh by means of ice, vast quantities of which are thus consumed. In this way the fish sold at Billingsgate are brought to market, and classed as *wet fish*, *shell-fish*, and *dry fish*; the latter being some of the varieties comprised in the first division preserved by curing and drying.

768. THE WET FISH sold in London, besides the salmon, eels, flounders, &c., already alluded to, comprise the following: 1st, *turbot*; 2nd, *soles*; 3rd, *brill*; 4th, *plaice*; 5th, *codfish*; 6th, *haddock*; 7th, *herrings*; 8th, *mackerel*; 9th, *whiting*; 10th, *sprats*; 11th, *whitebait*; 12th, *mullet*; 13th, *skate*; 14th, *smelts*. Besides these may be enumerated the pilchard, the gurnard, the conger eel, and the ling, which are seldom carried far from the places where they are brought to land, the first being a bad traveller, and the others being scarcely worth the cost of carriage.

769. THE TURBOT is the best of all our ordinary sea fish, and is taken on the south and east coasts of England in great numbers, and also from Norway and Holland, the last being the most highly valued. It is a broad and flat fish, thick and fleshy, with a gelatinous skin, which is highly esteemed by the epicure. In weight this fish varies from 5 lb. to 30 lb. The consistence of the flesh should be firm and curdy, without being hard or woolly; and it is better kept for a couple of days in a cool place than dressed at once. It is difficult to judge of the quality from a mere inspection, and, without a knowledge of the locality from which the fish comes, no judge, however experienced, can estimate it with anything like certainty. The Doggerbank fish are the best, next to which rank the Norway and Devonshire, and at the bottom of the list come the Scotch. They are in season all the year round in some one or other of the various fisheries; but the price depends upon the numbers brought to market, a middle-sized fish being sometimes sold retail at 8s. or 10s., and at others as high as two or even three guineas.

770. SOLES come next to turbot in general estimation as a table delicacy, and they are superior in point of digestibility, being in this respect very well suited to the invalid or dyspeptic patient. In shape and size they are longer in proportion, and altogether smaller than the turbot. They are taken in large numbers on the southern and eastern coasts, and are brought to market as quickly as possible, as they do not keep long without losing their sweet flavour. Like the turbot, they are in season all the year round. The skin is removed before dressing, being rough and nearly devoid of gelatine, as compared with that of the turbot. The flesh, also, is not so firm, but it is very delicate, and quite as well fitted to afford nourishment. The price of soles is usually about 8d. to 1s. per lb.

771. THE BRILL resembles the turbot still more closely than the sole, being nearly of the same size, but longer in proportion, and with a skin containing much less gelatine. The flesh is not so firm as the turbot, but quite as much so as that of the sole, with the flavour of which it may be compared rather than with that of the turbot. It is sold in London for half the price of turbot of the same weight.

772. THE PLAICE is a fish of a very watery and poor consistence, and even its skin partakes of the same inferior character. The best are those called Dowen plaice, which are caught in the channel between Folkstone and Hastings, and are of moderate size, seldom exceeding seven or eight pounds in weight. Dutch plaice are larger and coarser, but few people who can afford to pay for turbot or brill will purchase plaice of any kind. It is frequently sold as low as 3d. per lb.

773. FLOUNDERS have been described already under river fish—though they are also taken in the sea. *Dabs* are a smaller species of this genus (*Pleuronectes*), and are only eaten by the very poor.

774. THE COD, like the sole, is one of the fish best suited to the invalid, being light and digestible, and free from all oily flavour. It is a large fish, often weighing from twenty to thirty pounds, though on the average not being near the lower of those weights. The head is large and unsightly, and the body is by no means elegant, being devoid of that series of curved lines which gratify the eye in

the salmon. There are two chief varieties sold in England, the Doggerbank and the Scotch cod, the former having a sharp nose, with the body dark brown; while the latter has a blunt round nose, and the body of a light yellowish ash-green. It is a deep-sea fish, and is only taken with the hook and line on the edges and sides of the banks which are thrown up in the channels around the various lands in the northern seas, the fish not being found south of lat. 60 deg. They spawn from December to March, during which time, and for some months before, they are in high condition; but from April to the end of the summer, few cod-fish are to be met with in a state fit for the table, though some are still caught which have recovered themselves after a very early spawning. The flesh of this fish, when in season, is firm and curdy, easily separated into flakes, and very light on the stomach. The cod, like the salmon, is often crimped, which process also acts in the same way upon it. The liver is eaten with the fish, and by many people is considered a great dainty; as also is the sound, which lies along the inside of the back-bone, and is the swimming bladder of the fish. The cod is brought from the fishing banks, as near to the market as possible, in the wells of the fishing-boats, which are made expressly for this purpose. As, however, the fresh water is fatal to them, they cannot be brought up the river to London, and the cod are therefore taken out and killed, at which time the crimping is also done, and they are then taken on to Billingsgate by rowing wherries. The price of cod-fish averages by retail about 8d. per lb., but a large fish of 15 lb. may often be bought at Billingsgate for from 2s. 6d. to 5s.

775. **The Haddock** is a smaller fish than the cod, which it resembles a good deal in every other respect; the flesh, however, is more watery, and the flavour is inferior to it. The average size is not more than two or three pounds, but sometimes they reach a much greater weight. This fish is extensively cured and dried, which will appear under the head of "Dried Fish." Haddocks are generally sold at per fish, averaging about 1s. to 1s. 6d. a-piece; they are therefore a cheap dish, and may be considered a very economical and wholesome article for general use.

776. **The Herring** is met with in countless shoals in all the northern seas, reaching as far south as the north of France. They were formerly supposed to be a migratory fish, but naturalists have now come to the conclusion that the herring only returns to the deeper parts of the sea when the temperature of the shallows is too low for its sensations, and for the procuring of its food, and that it is never very far from the spot where it was spawned and reared. A great deal, however, of the supposed natural history of the herring, as well as other sea fish, is hypothetical, as it is utterly impossible to follow them into the deep and hidden recesses of the ocean. The fish is about eleven inches in length, of elegant shape, and rich in flavour for the table, but rather soft in texture, devoid of curd, and largely imbued with oily matter; so that it is not well calculated for a delicate stomach, though to a sound digestion it is wholesome and satisfying to the appetite. Fresh herrings carry badly, being soon liable to decomposition, and also so soft that they easily bruise; indeed, it is rare to see any herring without effused blood in the shape of a bruise about the head or body. For the London market herrings are taken in the channel near the mouth of the Thames; they are now also brought up by railway from Yarmouth and Lowestoft. The price varies much according to the supply, as they will not keep from day to day; but, on the average, they may be said to be sold by retail at about a halfpenny a piece, so as to form a very cheap article of diet, and as such they are largely consumed by the poor, especially in London and other large towns within reach of the sea. They are also used in large quantities when dried; but this trade will be further described under the fifth sub-section.

777. **Mackerel** are very superior to the herring when eaten fresh, but they are not capable of being dried or otherwise preserved, so that they are not so generally eaten by the poor as that fish, nor are they ever so cheap. This fish is one of the most beautiful of its tribe, being graceful in its outlines, and in colour of the most brilliant green on its back and sides, arranged in bars of two different shades; the belly, also, is of the most beautiful silvery white, so that with these elements of beauty, added to an elegant forked-tail, it strikes the eye as a pretty object of natural history, independently of its value for food. It is a size larger than the herring, and considerably stouter, with a smooth and firm look which is very peculiar; indeed, the fish looks more like a painted piece of marble or glass, than an animal substance. Mackerel make their appearance on our coasts in large shoals in the spring; showing themselves first in March towards the south of the island, and gradually appearing further north, so that on the coast of Scotland they are never seen till July or August. The reason for this is no doubt the lower temperature of the sea in those regions, which does not tempt the fish from their warmer

recesses till a later period of the year, when the sun has had time to effect a change in the water of the sea. They are very voracious, and live upon the fry of other fish. The season, as already remarked, lasts from March till September or October, when, or soon after which time, the cold drives the fish into deep water. They spawn early in the summer months; and after that time till quite late in the season, when they recover their plumpness and condition, they are not nearly so good as earlier in the year, being not only less plump and firm, but devoid of that peculiar flavour which is so much admired by those who like this fish. Mackerel are taken with the net, and require, like the herring, to be eaten as soon as possible after their capture, so that the dealers are allowed to sell them on the Sunday as a perishable article. The *horse-mackerel* is a different species, and though eaten by the very poor, yet it is coarse and not to be compared with the common mackerel. These last are sold at prices varying according to the supply, but on the average at about 3d. or 4d. a-piece. The flesh is firm yet not hard, and it has a flavour peculiar to itself, which forbids its use by those who have a delicate stomach, nor is it in other respects so digestible as the cod, the whiting, and the sole.

778. THE WHITING is more nearly the size and shape of the herring than the fish last described, but they are paler and more silvery in colour, and the flesh is devoid of that oily matter so remarkable in the herring and pilchard. It is extremely digestible and fit for invalids and dyspeptics, the flesh being tender yet not watery, delicate in flavour, and of a pearly white. Whiting make their appearance in the seas of Great Britain early in the spring in large shoals, and deposit their spawn near the shore. They are taken by the hook in large numbers, being very greedy and easily caught. Their length is about twelve inches on the average, and the weight between a pound and a pound and a half, sometimes even nearly double that weight. The season does not last long after they first make their visit to the coast, as they are very poor after spawning, which they do not recover till just before they betake themselves back again to the depths of the sea. In London whiting fetch a good price, being always in demand for the invalid as well as the ordinary dinner-table. The price on the average is about sixpence a-piece.

779. SPRATS are very like small herrings in appearance and flavour. In size they are seldom more than four or five inches long, but they are so soft in their bones that many people eat them without paying attention to these troublesome appendages to the ordinary small fish. They make their appearance at the time when mackerel and herrings are no longer to be met with, that is to say, in November, and remain in our estuaries and on the coasts all through the winter, leaving us early in March. During this time they are caught by the net in enormous quantities, so as frequently to be sold for manure, at sixpence per bushel, for want of the means of carriage to a market. Being a very palatable fish, and full of a mild oily matter, they are highly valued by the poor as a relish for their food; and they are readily bought by them, frequently at twopence or three-halfpence a pound in London, and at nominal prices near the coast where they are taken. They are too oily for the delicate stomach, but when fried they are well worthy the attention of those who like any of this kind of fish.

780. WHITEBAIT are considered by Mr. Yarrell to be a distinct species of fish, and not the fry of other fish, as was formerly supposed. They are peculiar to the Thames, and are taken with a fine net for the purpose, from Blackwall downwards. In size they are about a quarter of that of the sprat, and are more delicate in appearance and flavour, for though still oily, the character of the oil is more mild. They are considered a great dainty, and form the chief attraction to the visitors of Blackwall and Greenwich, so much so as to constitute the staple of the Ministerial dinner, at the close of each session of Parliament, which is annually held at Greenwich. They are only met with in July and the early part of the month of August, and they are sold at a high price, sometimes reaching several shillings per lb.

781. MULLET are of two kinds, the *gray* and the *red*. The former is found on the southern, and especially the south-eastern coast, where it frequents the mouths and lower parts of the rivers which empty themselves into the sea. It is about the size of the haddock, but with a somewhat larger head, and the colour nearly the same, but paler. The flesh is firm and well-flavoured, but not equal to the *red mullet*, which is also found on the south coasts, but is more common on the south-western shores. Its colour differs from the gray variety in being a beautiful rose-colour, with dashes of pale olive on the back, while the belly is silvery, but still with a slight tinge of red. It is found very plentifully on the coast of Cornwall and Devon, but does not frequent the northern parts of the island. The flesh is firm and of good flavour, and fetches a high price in London when in high season, as in May and June, though it is taken and brought to market during the whole year. In size it is not quite so large as the gray

mullet, seldom being more than fifteen inches in length.

782. SKATE, as brought to market, would disgust people who are easily prejudiced against their food by its appearance before dressing, being a most uncouth and formidable-looking fish. It is one of the cartilaginous division, and also a flat-fish, but it is much the largest of that tribe known on our coasts, being generally half a hundredweight, and sometimes as much as two hundredweight. The flesh is thick, white, and firm, easily digested, and very nutritious. Its flavour is peculiar, but agreeable to most palates; and the liver is sold and eaten with it by those who like that part, being similar in flavour to that of the cod-fish, yet more oily and slightly bitter. Skate is usually sold in slices cut from the fish, which is too large and unsightly to be boiled whole or in halves. These slices are known as crimped skate, though cut off the fish long after it is dead; and I am not aware that skate is ever crimped on the same principle as the cod and salmon. It keeps fresh for a considerable time, and should not be eaten, except in very hot weather, until the second day after it is taken; and even in the height of summer it may be kept sweet in salt and water, by which the flavour is improved, and the peculiar rank smack, which is objected to by many people, is removed. Skate are taken in great numbers on the whole of our coasts, where they are known as true skates, rays, maids, and thornbacks, the last having spines on their backs, and being not nearly equal in flavour to the true skate, though sometimes sold as such. The skate is in season from June to January, and is sold at prices varying from fourpence to eightpence per pound, after crimping and removing the coarser parts and skin, so that it is a very cheap and wholesome dish.

783. THE SMELT—said to resemble the cucumber in flavour—is much prized for the table, but as there are several varieties of this fish, epicures are not unnaturally divided as to its qualities. It is in all cases a very delicate-looking, silvery, and elegant fish, being semi-transparent in its structure and covered with beautiful scales, which are easily rubbed off. The smaller kinds are most valued, such as the Dutch smelts; and those which are caught in St. George's Channel, being larger and less delicate, are considered inferior to the smelts of the east coast. The smelt caught on the south coast is distinguished by Mr. Yarrell as a separate species, being the *Atherine* or *sand smelt*, and deficient in flavour. Smelts are sent to market carefully packed in small baskets on account of their fragility, and they are sold from one shilling per dozen upwards.

784. THE PILCHARD is only found on the shores of Devon and Cornwall, where the fishery is of great importance, but the produce is not used to any great extent in this country, the herring being preferred to it. They swarm on these coasts during the autumn, and give occupation to a great number of persons in their capture and cure. They are eaten there dressed fresh like herrings, but are not brought inland, as they do not bear carriage without serious injury. The bulk of the pilchards taken are cured and exported.

785. THE JOHN DORY is a rare fish, of a small size and flat form, found on the Cornish and Devonshire coast, and brought thence to London with great expedition and care, as it is highly valued there, and sold at a price higher even than the turbot.

786. THE GURNARD, RED AND GRAY, AND THE PIPER are peculiar to our coasts, the first being found on them universally, and the two last chiefly on those of Devonshire and Cornwall. Their heads are large and unsightly, being defended with spines and plates of armour. The flesh is firm and well-flavoured, especially when split and dried for twenty-four hours, as is the custom in Devonshire.

787. THE CONGER EEL is a large species of eel frequenting our seas, and sometimes as thick as a man's leg. They are occasionally brought to Billingsgate market, and sold at a very low price to the lower orders of retail fish-sellers, who vend them in slices, and frequently pass them off as cod-fish, to which they bear some resemblance.

788. LING AND HAKE are also taken in considerable numbers in our seas, and sometimes used by the inhabitants of our coasts; but they are not brought inland, nor are they considered as desirable articles of food. Nevertheless, they are both superior to haddock, and probably to plaice, in flavour and digestibility, as well as nutritious qualities. Why, therefore, these articles of food are so entirely neglected I am at a loss to know.

SUB-SECT. D.—SHELL-FISH.

789. THIS division of the fish-tribe is highly prized by the lovers of suppers and luncheons, and by those who depend upon their lobster or shrimp-sauce for bringing out the flavour of their turbot. The trade was formerly dependent upon the state of the wind, but in these days of screw-steamers and railways, oysters, lobsters, &c., are brought to market as regularly as vegetables to Covent-garden. All shell-fish are very liable to decomposition, and when this takes place they are very injurious to the health, frequently

producing severe bilious derangement, and in some cases a tremendous eruption, similar to nettle-rash. They are, however, when quite fresh, easily digested by sound stomachs, but they are never suited to invalids, with the exception of the oyster, which is light and yet nourishing, and can often be taken by them in preference to any other kind of animal food. The list of shell-fish comprises—1st, *oysters;* 2nd, *lobsters;* 3rd, *crabs;* 4th, *crawfish;* 5th, *prawns* and *shrimps;* 6th, *periwinkles*, *mussels*, *whelks*, and *cockles*.

790. Oysters are divided in the trade into *natives* and *common oysters*, the former being properly those which are fattened in the beds at Milton, in Kent, though the Colchester and Milford oysters are generally sold as *natives*, and are scarcely inferior to them. The mid-sea oysters are coarse and large, and cannot for a moment be compared with the natives in flavour, even if they are fattened and brought to market in high condition. At various places, as the oyster-beds near Swansea, they grow to a large size, and the oyster itself, when removed from the shell, weighs a couple of ounces, or more. Oysters spawn in May, the produce being called the *spat*, which is a viscid matter, found in great abundance adhering to the rough projections, &c., at the bottom of the sea. The oyster itself consists of a soft body, with an apparatus for digestion, respiration, and reproduction; and it is contained within two flat shells, which it has the power of closing by its powerful muscle, the opening being effected by the elastic material at the hinge. Hence, whenever the shells are closed we may be certain that the oyster is alive, because as soon as death takes place the muscle relaxes, and the elastic matter at the hinge has full power to act in opening the hinge. The shells are composed of carbonate of lime united by gelatine. The spat is collected by the fishermen, who throw it into still-water in creeks or arms of the sea, in order to preserve the young oysters for future use. Here they remain till two years old, more or less, according to their growth, when they are taken up and brought to market. The oyster season lasts throughout the winter from the month of September till May; and it is usually said that oysters are in season in every month which has the letter R in its name, though this rule does not strictly apply, since they are generally sold in the latter end of August. Oysters are fattened with a variety of substances, oatmeal being the one which is *publicly* used, though many not quite so captivating to a squeamish taste are really employed. Oysters are sold by the peck at Billingsgate, where the price varies from 2s. to 6s. per peck. They are generally retailed at 6d. a score of common oysters, and 1s. for the same number of natives, or 5s. a barrel of 120 natives.

791. Lobsters are more influenced by the recent improvements in the quickness and mode of carriage than most other fish. Screw-steamers are now employed to bring them from Norway, and there is one salesman who is said to receive from fifteen to twenty thousand in a single morning. Some of these are at once sent to the boiling-houses near the market, where huge caldrons are kept for the purpose, and where they are dressed at a small charge per score; the remainder are kept alive, and are sold to the various fishmongers, who boil them on their own premises, and are thus able to exhibit them to their customers in a half-dead state, for though able to move their claws, they can hardly be said to be alive. Besides Norway, they are also taken on the rocky coasts of England and Scotland. These fish change their shells every year, and during the time when they are without any covering, or have only a very thin one, they retire to the deepest recesses of the rocks, and are then never taken in the traps which succeed in capturing the well-covered fish. They supply the place of oysters, being plentiful in the summer and not easily procured in the winter season, at which time only the males are in good condition. The quality of lobsters is judged by the weight, which is in proportion to the condition of the fish; those which are out of health being, when dressed, watery and devoid of flavour, and as the water drains away leaving the flesh full of holes, or cellular, the actual weight is diminished in proportion, and the loss may readily be detected. The female lobster, generally called the *hen*, is known by the eggs which she carries attached to the under parts of her body; and they being very ornamental, are used to sprinkle over turbot, and also to mix with and improve the appearance of the sauce. If the lobster is stale, the tail hangs limp; while if fresh it is retained close to the belly, and if drawn down it will spring back again with some force as soon as liberated. The price of lobsters is exceedingly fluctuating, the average being perhaps 2s. 6d. for a moderate-sized one.

792. Crabs, like lobsters, are taken in traps, and are found in similar localities, though not always exactly in the same spots. They are not so highly valued, either to be eaten alone or for making sauce, although a crab of moderate size contains a much larger proportion of edible substance than a corresponding lobster, and by many considered superior in flavour. Crabs are in season, like lobsters, from May to September.

793. **Crawfish** are very similar to the lobster in all respects, but are inferior in quality and in general estimation. They are in season all the year round.

794. **Prawns and Shrimps** are lobsters in miniature, and they are taken in the same way on all our sandy coasts. Prawns are larger, but not of such fine flavour as the shrimp when quite fresh. Both soon lose their delicious and peculiar taste by carriage and the necessary delay, which occasions more or less decomposition.

795. **Mussels and Cockles** are used for sauce instead of oysters, being very much cheaper and not *very* inferior in flavour, especially the latter. Mussels are sometimes poisonous, and should at all times be eaten with care, as they are very apt to disagree with the stomach. *Perriwinkles* are only eaten as a relish by the lower classes, who are very fond of them, as well as of the similar univalves called *whelks*.

796. **The Turtle** may perhaps be comprised under this head, though it is properly a reptile. Few private families, however, go to market for them, but buy what they want from the pastry-cook or the tavern-keeper. The preserved turtle, already alluded to at page 254, is by far the best article either for the invalid or for the ordinary purposes of the table.

797. **The Frog** is not eaten in this country, though in France it is considered a great delicacy. The species is a different one to our common frog, being the *Rara esculenta* of Linnæus. The hind-quarters only are eaten, and the flavour is really very good.

Sub-sect. E.—Dry Fish.

798. **This** title comprehends not only the really dry fish, but also pickled salmon and herrings, and salt-fish, known by that name, which are sold for use during Lent, and on the fast-days of the Catholic church. Salmon, haddock, herrings, and sprats are also sold dry, being salted and smoked, or *rubbed over with pyroligneous acid*, which answers the same purpose, at less cost. Salmon, dried and smoked, is called *kippered*, for which purpose the spent fish or *kelts* are often, and, I am afraid, generally used. Preserved herrings are either *red herrings* or *bloaters*, the former being very salt and highly-dried and smoked, so as to keep for a long time, whilst the bloaters have very little salt or smoking, and are only calculated to keep a very short time, as a fortnight, on the outside, in warm weather. These fish are not adulterated, being really the article which they pretend to be, though the quality varies greatly, especially in the case of salmon. *Salt fish* consists of cod, prepared chiefly in Newfoundland, some being dry, and others pickled by being placed in barrels with a liberal supply of salt. Both of these require soaking in water before use; but this is generally done by the fishmonger, who sends home the fish ready for dressing.

799. **In Point of Economy**, salt-fish, red herrings, and bloaters are as cheap as most kinds of animal food—that is when used as a relish, and not to be depended on as the substantial foundation for a meal. Bloaters and kippered haddock are now extensively employed by the labouring classes for this purpose, being bought at a low price—that is, at the rate of two for a penny of the former, when very plentiful, and twopence a-piece for the latter. As they contain very little salt, they do not promote thirst, which is the great objection to the red herring.

Sect. 8.—Lard and Dripping.

800. **Lard** consists of the fat of the pig, melted down, and in that way separated from the cellular membrane in which it is contained. This melting is usually called "rending," and is sometimes done soon after the pig is killed, and at other times at a considerable interval, the fat being in the meantime preserved in salt. In England, lard is chiefly made from the kidney-fat, which is the most pure and free from mucilaginous fluid; but a great deal of the foreign lard is melted down from the fat of the surface, mixed with that surrounding the kidneys, and from this circumstance is much softer than the English article. In melting lard on the large scale, various plans are adopted in order to avoid the danger of burning it, and wherever steam-heat can be introduced without difficulty, it is found to be the most certain mode of effecting this object. When melted, and cooled to near its solidifying point, the lard is at once poured into bladders or barrels, and is consequently either sold as *bladder-lard* or *keg-lard*, the former being of the best quality, and fetching the highest price.

801. **Lard** is imported from Ireland, America, and Hamburg. When pure it should be *nearly* devoid of taste and smell, though still having enough of each to characterise it as *sui generis;* in colour, it should be of a pure white, not too opaque, and in consistence firm, yet not hard, and it should be perfectly homogenous. When melted it should not sputter, thus showing the presence of water; and neither before nor after cooling again, should there remain any deposit.

802. **Extensive Adulterations** are practised in lard, by mixing *flour*, *water*, *starch*, *lime*, or *alum* with it, and in some cases, *carbonate of soda* or *potash*, and *salt*. In

addition to these, veal and mutton-fat are also mixed with lard, in order to give the inferior qualities the consistence which good lard ought to have. Water is easily detected, as already shown, by the sputtering made in melting. Flour and starch can only be discovered by the microscope, excepting that on melting lard containing these articles, an opaque body usually is seen floating in it, and generally falling towards the bottom. The saline ingredients mentioned above require chemical tests in order to render them apparent.

803. THE PRICE OF LARD is generally slightly beneath that of salt butter. It is usually sold by the provision-dealer.

804. DRIPPING is generally made at home in sufficient quantities for domestic consumption, but among some classes, where there is little or no roasting going on, this article is not made, and it is therefore eagerly sought for. In London, dripping is sold at the cook-shops and eating-houses at from 7d. to 8½d. per lb., and is bought largely by the small housekeeper, as being more economical than either butter or lard, which cost about one-third more, and for some purposes do not go so far.

SECT. 9.—FLOUR AND BAKER'S BREAD.

805. The various kinds of flour used in ordinary house-keeping consist of *wheat-flour*, *Indian-meal*, *barley-meal*, *oatmeal*, and *pea-meal*. These are bought at the corn-chandler's in London, or in the provinces at more general shops, and wheat-flour there perhaps only of the miller. They are all liable to considerable adulterations, which will be specified, as well as the best modes of detecting them. These, however, will be given under a separate head, the importance of the subject demanding ample space for its elucidation.

SUB-SECT. A.—WHEAT-FLOUR.

806. WHEAT-FLOUR is obtained in this country from two varieties of wheat, *spring-wheat* and *winter-wheat*, which, again, are either *red* or *white*. Foreign wheat belongs to several other kinds, some of which are of superior quality, while others are only fit to mix in small quantities with the best wheat, or to make flour of very inferior quality. Every kind of flour used in the formation of bread consists of two distinct classes of substances; one *nitrogenised*, consisting of gluten, vegetable fibrin, albumen, caseine, &c., so named after the various similar proteine compounds found in animal substances; the other, *non-nitrogenised*, consisting of starch, sugar, dextrine, or gum, &c., all products peculiar to the vegetable kingdom. Besides which, flour contains certain minerals, as silex, lime, &c.

807. THE GLUTEN is the substance of the most importance in the composition of flour, inasmuch as it contains in its crude state most of the other nitrogenised substances, viz., fibrine, mucine, or caseine, and oil. It is separated by making the flour into a paste, kneading this well in a muslin bag, either under water, or under a stream running over it, and continuing this as long as the water is rendered milky. This washing dissolves the albumen, sugar, gum, and salts, leaving behind the *crude* gluten, consisting of—

Pure gluten	20.0
Vegetable fibrine	72.0
Caseine	4.3
Oil	3.7
	100.0

The greater part of the oil is contained in the bran or husk, but some of it remains with the gluten. In the trade the proportion of this valuable substance is guessed at by making a little of the flour into a paste, and judging of its tenacity by drawing it out into strings, and as this quality depends upon the gluten, the one is a measure of the other. These substances are used in making flesh or muscle, through the agency of the blood, into the composition of which they first of all enter; and they are found in wheat-flour in larger proportions than in any other description of flour.

808. THE STARCH, SUGAR, AND GUM are chiefly useful in forming the fat of the body, and in carrying on the respiratory process, and hence their presence must not be overlooked, though not perhaps of equal importance with the gluten.

809. THE GRINDING OF WHEAT is a very important process, and upon its proper and skilful performance the quality of the flour in great measure depends. There is a great art in mixing the wheat, called in the trade "mealing;" and it is found that two or three sorts together make better flour than any one of them would turn out; and hence the object of the miller is to select his samples so as to serve his purpose. Steam is now very generally applied to grinding, by which all uncertainty is overcome, and the miller is not obliged to keep an unnecessary stock on hand in case he should be short of water or wind. After the wheat is mixed, it is carefully winnowed from all dust, and then descends through a hopper to the space between two millstones. These are about four or five feet in diameter, made of a peculiarly hard French stone, joined together by a remarkably strong cement, known only to the makers of the article. The surfaces are rough or grooved, and the lower one

being fixed, the upper one revolves rapidly more than a hundred times a minute. The centrifugal force drives the flour from the centre, where it is received as grain, to the circumference, where it falls out into a box for the purpose; and as the upper stone is very slightly concave, there is no difficulty in the broken grain gradually finding its way outwards, and being ground in its passage. The flour descends through a spout into a bin in the story below, after which it requires to be *dressed*—the operation of removing the bran, pollards, &c. The machine for this purpose consists of some kind of sieve, varying in the fineness of its material, through which the fine flour passes, leaving the coarse behind. Thus the first sifting removes the "firsts," the second the "seconds," and the third the "thirds," leaving the bran and pollards to be afterwards separated in the same way. Various contrivances have been invented for grinding and dressing, but the millstone is still found to answer better on the large scale than any steel apparatus, though this will serve well enough for private use. By directing a blast of cold air upon the stone it is kept cool, and thus a much better flour is produced; and, again, by an exhausting or pumping apparatus, the loose flour dispersed in the air by the blast is collected, and saved from waste.

810. A QUARTER OF WHEAT, WHEN GROUND, produces, according to a table published on the authority of a Dartford miller, by the name of Hard, the following proportions of the various kinds of flour, namely:—

	lbs.
Flour	392
Biscuit, or fine middlings	10
Toppings, or specks	8
Best, or Turkey pollard	15
Fine pollard	18
Bran and coarse pollard	50
Loss by evaporation and waste ...	11
	504

The pollards are sold for feeding pigs, poultry, &c., and the bran for horses and cattle; leaving the flour only for the use of the baker, who requires three qualities—the "firsts," for his *fine wheaten bread;* the "seconds," for his *household bread;* and the "thirds," for *brown bread;* which, however, is professedly made of wheat undressed. In many cases the baker leaves the "firsts" to the pastrycook, and promotes the "seconds" to its office in making best bread; while the "thirds" are used by him for household bread, and mixed with bran for brown bread.

811. THE FLOUR, when ground, is stored in sacks or barrels, the former being the English method, whilst the latter is that adopted by the Americans. The sack consists of 280 lb., and is divided into five bushels, each being 56 lb., and as the bushel again is divided into four pecks, this last measure weighs 14 lb. The American barrel weighs 196 lb., which is 10 lb. more than two-thirds of the English sack, and yet it never sells at two-thirds of the price of that commodity. Thus, at the present moment, the best English flour is quoted at from 63s. to 65s. per sack, whilst the best American is from 39s. to 41s. per barrel. The reason for this difference is not that American flour is in itself worse than English, for much of it is of very superior quality, but that the bakers do not like the barrel as a means of storing it, and also that in the long voyage the flour is apt to "clod," that is, to collect in a mass so as not to mix readily with the water. Besides these objections, the wood sometimes, it is said, communicates a disagreeable flavour to the flour; but this is a very doubtful fact. In order to meet the prejudices of the bakers, a vast quantity of American and Canadian flour is removed from the barrels into sacks, and in the process the contents of those barrels which are clodded, are broken up by rotation in a cylinder. All the flour imported from New York is branded under careful supervision, the qualities being grouped under four classes. Much, however, of this is more or less damaged by sea water, or by other causes becoming sour, so that the brand alone is not a sufficient test of quality. But any housekeeper, who can rely upon the judgment and honesty of the corn-factor with whom she deals, may depend upon obtaining a barrel of good and sweet American flour, at any time at a price considerably below that of the corresponding quality of the English make; and this is a very important consideration in large families where the consumption of flour for bread and other articles almost equals that of all the other necessaries of life put together. In buying flour, the sack is always to be returned, but the barrel becomes the property of the purchaser, although its weight is not included in that specified as the weight of the measure of flour. The finest qualities, both of English and foreign flours, are seldom required for domestic use, the "seconds" being quite good enough for all purposes but the most delicate kinds of pastry. The quantity of bread made, and the various uses to which flour is put, as well as its adulterations, will be found under headings pertaining to each.

SUB-SECT. B.—INDIAN-CORN MEAL.

812. The meal from Indian corn, or maize,

is also sold in the shops as *polenta;* and the coarsely-bruised grain as *hominy*. The former is capable of being made into nutritive and well-flavoured bread, either alone or mixed with other meals, whilst the latter serves, after long boiling, to make puddings, and for the feeding of poultry. Maize is now extensively used in many of our public charitable institutions, and is found to answer every purpose at a much lower price than wheat-flour.

813. INDIAN-MEAL, OR POLENTA, resembles wheat-flour more nearly than any other farinaceous article in its composition, containing, however, less gluten, but it has more oil, and therefore is more fattening, but less capable of supporting great muscular waste, as in working men. In taste, it is somewhat peculiar, being very sweet, and to a person unaccustomed to its use, somewhat sickly.

814. THE PRICE of Indian-meal flour varies a good deal, but it may generally be purchased at less than two-thirds of that of the wheat-flour known as "seconds," and at half the price of "best" flour. Maize is now selling at 4s. per bushel, while white wheat is worth from 9s. to 10s., and red from 8s. 6d. to 9s. 6d.; but as the proportion of husk to flour is greater in maize than in wheat, the relation in price is not quite the same between the respective meals.

SUB-SECT. C.—BARLEY-MEAL.

815. As with wheat-flour, so with barley-meal, it is the produce of several varieties of the grain known as barley; but a vast proportion of that brought to market is the produce of the two-eared barley. The grains of these in their natural state as *barley* constitute the material for making malt, and also for feeding poultry, while the meal is used for fattening pigs and poultry, and for feeding dogs, &c. When denuded of the husk, it is called *Scotch barley;* and when the ends are still further rounded off it becomes *pearl-barley*. When carefully ground and freed from husks, it is the *patent barley* of the shops; and when ground with less care, *barley-meal*.

816. BARLEY-MEAL is composed of less azotised ingredients than either wheat-flour or Indian-meal; it is particularly deficient in crude gluten, and consequently it may nearly all be washed away, when a paste composed of it, mixed with water, is submitted to a current of the latter fluid. The starch, however, is very similar to wheat-starch; but in the action of boiling water upon the two flours there is a great difference; for after long boiling of barley-flour a portion remains undissolved, called *hordeine*, whilst wheat-flour treated in the same way is entirely taken up by the water, or at least practically so, the remnant being scarcely appreciable by our ordinary senses.

817. BARLEY-MEAL generally bears the same money value as Indian-meal, or about two-thirds the price of "seconds" wheat-meal. It is very fattening, but not so capable of imparting muscle as wheat-meal or Indian-flour. At the present time barley for grinding sells at 4s. 6d. to 4s. 9d. per bushel, and barley-meal at about 6s. to 6s. 3d. per bushel.

SUB-SECT. D.—OATMEAL.

818. OATMEAL is produced from the oat of this country, of which several varieties are grown. The nature of the soil and climate, however, influences the quality more than the plant itself; and of all soils and climates none come up to those of Scotland for producing this meal in high perfection. Oats are sold as such for feeding horses, or, when intended for human food, they are deprived of their rough husks, and left in a state called *groats;* or, again, ground in various degrees of fineness, called *coarse oatmeal*, or *fine oatmeal*. The former state is the more common in Scotland, and the latter in England.

819. OATMEAL is highly prized as an article of food, and is said to be even better suited for the nourishment of laborious working-men than even wheat-flour. There is no doubt that for horses, and probably for dogs, it is much better adapted; but with regard to the human race it becomes a question only to be settled by a long trial on certain individuals who have had time to become accustomed to the use of each. In Scotland oatmeal is the chief food of the labouring population, and they certainly are as able and willing to work as the English; but I much doubt whether the latter could be made to thrive to the same extent upon it as their northern brethern. *Oats* are composed of a larger proportion of protein compounds than even wheat, and they are richer in oily matter than anything but Indian-corn. They are, however, deficient in starch and sugar, and consequently are not well-adapted for making malt, though they *may be* used for that purpose.

820. THE PRICE OF OATMEAL is generally high in proportion to that of oats, which arises from the great waste occasioned in the grinding, the husk being thicker than in other grain. A bushel of oats is generally expected to weigh from 39 lb. to 41 lb., whereas it only produces 22 lb. to 24 lb. of meal, or very little more than half. Wheat, on the other hand, loses little more than one-fifth of its weight, and maize and barley between a fourth and a fifth. Hence, it is usual to sell oatmeal by the hundred-weight, or ton, without any reference to

measures of bulk. Oats are now selling at 24s. to 28s. per quarter, or about one-third the price of best white wheat. Oatmeal, however, is worth £13 to £14 10s. the ton.; while wheat-flour for the same amount (being eight sacks) is worth only £25 4s., not even double the price of oatmeal. But, on calculation, it is found that it takes twelve bushels of oats to make 280 lb. of meal, while somewhat less than six bushels of wheat will turn out the same quantity of flour.

821. In Buying Oatmeal there is little opportunity of judging of its quality, except as to sweetness, by any other test than that of boiling it; for it will be found that samples apparently alike when boiled will form very different articles of food. I have found that some Scotch meal will turn out nearly twice as much thick "stirabout" as English meal of apparently as good a quality, and hence this test should always be adopted when practicable; though it does not follow, that because it absorbs more water, the result is therefore more nutritive. At the same time, however, it is more *satisfying*, and that to a family of poor half-starving children is of the greatest consequence.

Sub-sect. E.—Pea-meal and Bean-flour.

822. Pea-meal, obtained from grinding white peas, is used in cookery for pea-soup and peas-pudding. It is very full of nitrogenous compounds, and highly stimulating and nutritive, though somewhat given to produce indigestion, accompanied by flatulence and constipation. When mixed with wheat-flour in small quantities to form bread it does no great harm; but its price is seldom low enough to make it worth while to adopt this mode of adulteration.

823. Bean-flour, the result of grinding and dressing horse-beans, is very similar in its qualities to pea-meal; but it is not used for domestic purposes. It is solely mentioned here on account of its supposed frequent adoption by the miller or baker; its price, which is often below that of wheat-flour, tempting them to the fraud; but, according to Dr. Hassall's investigations, it is not one which is adopted in London to any extent. At present, beans and peas fit for flour-making are worth about 6s. per bushel, and turn out even a larger quantity of flour than wheat, so that the saving would be about 2s. 6d. per. bushel over the lowest price of English red wheat.

Sub-sect. F.

The Adulterations of Flour, and the Modes of Detecting them.

824. On the subject of the adulteration of flour, by which is here to be understood that used in making bread, there are various opinions held by those who have examined into the subject. Thus, while Dr. Hassall maintains that very little fraud is practised in London in this important article of diet, Drs. Normandy, Pereira, and Ure are of opinion that several substances are introduced, more or less prejudicial to health. But as the means used by Dr. Hassall are more reliable than those adopted by the latter-mentioned trio (he having added the microscope to the chemical tests), we may hope that they have been led into error by the activity of their imaginations. Dr. Hassall, however, admits that he did not test the samples of flour for alum; and I believe there is little doubt that it is used by the bakers to a great extent, and that in order to please them, the millers are led to introduce it into their flour before sending it out, so as to save the bakers from the trouble of mixing them carefully together. Dr. Pereira says, that "wheat flour is subject to adulteration with various vegetable and mineral substances." Mitchell, who has written at great length on the subject, says, that the following substances are employed in the adulteration of flour, namely, "potato-starch (much employed in France), bran, pea and rye-flour, chalk, burnt bones, powdered flints, and plaster of Paris." Dr. Normandy remarks, that "the substances principally employed for the purpose of adulterating wheat-flour, are potato-starch, bran-flour, Indian-corn-flour, rye and rice-flour, which alimentary substances are objectionable only when the flour containing them is sold as genuine wheat-flour; but, besides these so far venial additions, flour is sometimes sophisticated by alum, chalk, bone-dust, and plaster of Paris, and it is more especially against these that the rigour of the law should be enforced."

825. Potato-flour is detected chiefly by means of the microscope, which, however, should be used by a person well skilled in its manipulation. Dr. Hassall gives a beautiful sketch of each of the various kinds of flour, by which the observer may be enabled at all times to make out the composition of the sample submitted to his microscope, if he is a practised hand in that very interesting branch of modern science. But, besides the microscope, other means are available, as first pointed out by Dr. Ure and Gay Lussac. One of these depends upon the greater lightness of potato-flour, so that a vessel which holds exactly a pound of genuine wheat-flour will contain a pound and a half of potato-flour; and in this way, by ascertaining how much of the real article a given vessel will hold, an estimate may be formed of the adulteration of a suspected

sample. Thus, if the vessel calculated to hold a pound of wheat-flour holds three-quarters of a pound only of the meal to be tested, the flour is all or nearly all potato-starch; and if fourteen ounces, more or less, then the addition or adulteration will still be very considerable. The proportion of gluten contained in the flour, as shown by the adhesiveness of the paste, is also a very good practical test, as potato-starch contains only a very small proportion of that material. Gay Lussac's method, by which a small portion of the suspected flour is rubbed down with fine sand in water, and then treated with iodine, appears to be a troublesome and fallacious one, requiring considerable practice to detect the variation of colour, and therefore not even so well suited to the common observer as the microscope, which is more easily mastered by the same amount of observation and practice.

826. The Adulteration by Indian-meal can only be detected by the microscope, for the details of which process I must again refer the observer to Dr. Hassall's very interesting and trustworthy papers, originally published in the *Lancet*, and since then in a separate volume.

827. Bean and Pea-meal are also easily detected by the microscope, but their presence may also be discovered by pouring boiling water over a small quantity of the flour, when the peculiar smell of each will be evolved. This method, however, requires a discriminating nose; but I know that it is successful where the adulteration is practised to any great extent, and the person making the experiment is accustomed to this kind of investigation.

828. Oat and Barley-meal and Rice Flour are incapable of being detected except by the microscope, and also to some extent by the gluten-test.

829. The Minerals used in adulteration may be detected by chemical tests, though they are also said to be easily discoverable by the microscope.

830. Chalk will show its presence by the evolution of carbonic acid gas, causing an ebullition, on the addition to flour and water of a few drops of diluted hydrochloric acid.

831. The Presence of Other Inorganic Substances is better ascertained by burning the flour in a crucible till it is completely converted into a gaseous form, excepting a small part remaining as ashes. In all flour a certain proportion, or about one and a half per cent., consists of silex, lime, &c.; but if more than this remains, it is the result of wilful adulteration, and consists of some of the earths, as bone-earth, plaster of Paris, white clay, or alum.

832. Plaster of Paris may be detected, according to the method given by Mitchell, which is as follows:—"Take a quantity of the flour, act on it in the same way as in the estimation of gluten, and pour the liquid containing the starch (as well as the plaster) into a conical glass. In course of time all will be deposited, leaving a clear liquid, but the plaster being heavier than the starch, will be deposited first. When the deposition is complete, pour off the water and place the glass with the deposited starch and plaster in a warm place. The precipitate will dry, and in a short time fall out of the glass; all the plaster will be found at the point of the cone, which is to be separated and boiled in a solution of carbonate of soda. During the ebullition the sulphate of lime present will be decomposed, with the formation of an insoluble carbonate of lime, and a soluble sulphate of soda. If the whole be now thrown on a filter, and a solution of chloride of barium added to the filtered solution, a white precipitate of sulphate of barytes will fall (if plaster of Paris is present), which is insoluble in excess of nitric acid. Wash the insoluble residue of carbonate of lime on a filter, and dissolve in a little nitric acid, an effervescence will take place, and lime may be detected in the solution by means of oxalate of ammonia, which will produce a white precipitate, soluble in excess of nitric acid." This test, together with the next, are introduced as samples of the chemical methods of analysis; and it will readily appear that some practical skill is required, so that a novice is not likely to obtain much information.

833. Alum is a sulphate of alumina and potash, and in order to arrive at a complete analysis of it the tests for both substances must be used—that is to say, for sulphuric acid and alumina, but for practical purposes it is enough to obtain a knowledge of the alumina present. Dr. Hassall directs as follows:—"First char 1000 grains of the flour or bread, then boil in a flask with four drams of nitric acid, four of hydrochloric, and four of water; evaporate to dryness; when cold add one ounce of distilled water, and boil for a few minutes; while boiling, dilute with two ounces of liquor potassæ, and boil again for a few minutes; then filter, neutralize with hydrochloric acid, and precipitate with ammonia. The precipitated alumina should be washed, dried, ignited in a platinum dish, and weighed." This process is described plainly enough for scientific persons, but I am afraid is of little use to any others. Alum acts as an astringent, and in large quantities as an irritant, and there can be no doubt that it is prejudicial when used in any appreciable

quantity, producing dyspepsia, constipation, and flatulence. Hence, it is very desirable to avoid it, and for this purpose it is that many people take the trouble to make their bread at home; but if they are liable to be imposed upon by the miller as well as the baker, they gain little by the attempt, except, *perhaps*, a saving in point of expense, unless they also grind their wheat, as well as make and bake their bread. Nevertheless, I am inclined to believe, that by going to a respectable tradesman, good wholesome flour may in most cases be obtained, and that when adulteration by alum takes place it is chiefly to meet the views of the baker.

834. The object in using plaster of Paris, or chalk, is the substitution of a cheap material for a dear one, fine plaster costing about 6s. 6d. per cwt., and chalk a mere nominal price. They are, however, so easily detected, that it does not appear that they are used in this country to any extent.

835. OATMEAL, in consequence of its high price, is largely adulterated both with Indian-meal and barley-meal, which can only be detected by the microscope; or they may be roughly guessed at by boiling, which makes a complete jelly of the oatmeal, but has not the same effect upon the other meals. Although oats are much cheaper per bushel than barley or maize, yet the meal is much dearer (see par. 820); consequently there is a great temptation to this fraud, which appears to be extensively carried on in the contracts for supplying workhouses, &c. It is no uncommon thing to find contractors delivering a meal, professing to be oatmeal, at a much lower rate than the wholesale price of the pure article; and when this is the case we may always know that there is an admixture of some inferior meal, as, of course, they will not do business at a loss to themselves. The great object in these cases is to give the patients a diet of a very cooling yet nourishing kind, for which purposes the oat is well calculated, while the substitutes are more heating, and therefore the adulteration is injurious as well as deceptive.

SUB-SECT. G.—BAKER'S BREAD.

836. A great variety of articles are sold by bakers as bread, which may be enumerated as—1st, *best wheaten bread;* 2nd, *household bread;* 3rd, *brown bread;* 4th, *fancy bread;* 5th, *unfermented bread;* 6th, *plain biscuits;* 7th, *fancy biscuits.*

837. THE MATERIALS of which these breads are composed consist of the flour described in the last section, together with other substances, as water, salt, milk, butter, sugar, &c.; and, in addition, one or other of two substances, in order to develope carbonic acid gas within the bread, and thus produce a degree of sponginess or lightness, which is not only agreeable to the palate, but also aids the digestion within the stomach by admitting the gastric juice and other solvents, as the saliva, &c., to the interior of the bread. These consist of—1st, *yeast*, either common, German, or patent; and, 2nd, the use of *carbonate of ammonia*, or *carbonate of soda* and *tartaric acid*, or *carbonate of soda* and *hydrochloric acid*, which last mixture is most commonly used—the acid seizing on the soda, gives off carbonic acid gas, and the new combination remains in the bread in the form of common salt. This last is an ingredient in all bread; and, therefore, it is supposed that if two articles are employed which leave nothing behind but salt and carbonic acid, there can be no harm done, whilst, at the same time, a considerable saving is effected by avoiding the fermentation of the bread, and consequent conversion of part of it into carbonic acid gas, and alcohol. The advantages and disadvantages of these plans will, however, be best considered under the head of Bread-making, as a species of home manufacture, inasmuch as there is little doubt that the bakers cannot, or will not, adopt the use of soda and acid to any extent, and therefore the public have not the choice of the two kinds of bread in most cases. Sometimes, however, a baker offers "unfermented bread" to his customers, and in such a case it is well to know that nothing can be gained by it in point of digestibility, because it is well known that the use of yeast is quite free from all objection, on the score of health, and that the only reason for employing the soda and acid, is that they are always available, and that a greater weight of bread may be produced by their aid than with that of barm; but as the cost of the former is somewhat greater than that of the latter in point of economy, there is really no gain, and in point of trouble, the advantage is slightly in favour of the yeast.

838. YEAST consists of a number of fungi, called the yeast-plant, floating in the liquor in which they are developed. These fungi are in the shape of minute oval or circular bodies, or sporules, which, under circumstances adapted to their development, grow and multiply themselves to an incredible extent, in a very short period of time. They are easily destroyed by heat, cold, or mechanical injury, or by chemical agents. In dried yeast, great care is required in handling it for the purpose of making it into parcels, or it will be rendered useless by the destruction of its vital principle. Great pains have been taken by different

observers to trace the development of the yeast-plant, and Dr. Hassall has been so fortunate as to have made out all its stages, which he describes with great minuteness, and, no doubt, most accurately, in his remarkable microscopic investigations. He says that in the *first stage*, or that in which it is generally used, it consists entirely of sporules, which are mostly separate, but sometimes feebly united in twos and threes; they vary in size and form, and nearly all contain nuclei, which are the germs of future sporules. In the *second stage*, in which the plant exists in the form of root-like threads, known as *thallus*, the change takes place after the lapse of some days, and only under favourable circumstances, by the sporules becoming elongated; a partition then appears in each, by which two cells are developed out of one, and this extension still continuing, other septa appear, until at length jointed threads, at first simple and undivided, afterwards jointed, are formed, to which the above name is given. In the *third stage*, after a further lapse of time, vertical threads spring up from the thallus, which become branched when the plant is fully developed, and at the extremity of each branch a row of rounded corpuscles show themselves, which are about the size of the original sporules, but darker in colour and firmer in texture. The three kinds of yeast used in making bread are called brewer's yeast, patent yeast, and German yeast. *Brewer's yeast* is too well known to need minute description; but when examined by the microscope the minute sporules may readily be seen within it. It is obtained from all kinds of malt-liquor, and is distinguished accordingly, as *ale yeast*, *porter yeast*, and *small-beer yeast*. *German yeast*, sometimes called *dried yeast*, is composed of sporules only, without any liquor or gas. It is in the form of a paste, and is obtained from the fermented liquid by filtration. It is imported into this country in bags of half a hundredweight each. *Patent yeast* is made as follows:—Boil two ounces of the best hops in four quarts of water for half an hour; strain and cool till lukewarm, then add a small handful of salt, and half a pound of sugar, beat up one pound of best flour with some of the liquor, and mix all well together. Let it stand 48 hours, then add three pounds of potatoes, boiled and mashed; let it stand again 24 hours, taking care to stir it frequently during the whole time, then strain and bottle and it is fit for use, or it will keep in a cool place for two months.

839. YEAST, WHEN ADDED TO FLOUR, or other substance containing sugar, or starch convertible into that substance, and nitrogenised materials, brings on chemical changes which are known by the term *fermentation*, either alcoholic or vinous. In bread-making the change consists in the conversion of the sugar contained in the flour into alcohol and carbonic acid gas, which in their formation distend the dough, and produce cells within its interior. The starch-corpuscles remain entire, but they are altered in form, and hence it is pretty clear that no further change is effected than is sufficient to develop the gas, and that the only objection to the use of yeast consists in the loss of substance. It is held by some that yeast is in itself unwholesome, but there are no facts to support this hypothesis, and the use of unfermented bread does not appear to be at all more wholesome than that of bread made in the ordinary way.

840. THE METHOD OF MAKING BREAD adopted by the baker, is much the same as that which will be hereafter described as adapted to the use of private families. The chief difference consists in the modes of adulteration or substitution which are practised by some bakers, consisting chiefly in the employment of boiled potatoes or rice, when these are so cheap as to offer the temptation, or of alum, which is introduced in order to effect certain improvements in appearance and an increase of weight. By law, every quartern loaf is obliged to be 4 lb. in weight when sold over the counter, and the constant supervision of the police keeps up the weight pretty accurately; but though the same law fines the baker for delivering to his customers bread under the proper weight, this practice, I have reason to believe, is extensively adopted, and probably they will say to compensate for the trouble of delivery. But in any case the great object is to produce a sufficiently baked loaf of the prescribed weight, and to effect this, provision must be made against the flying off of the water too rapidly for the baker's purpose. This is effected by the alum, which causes the bread to be more white than it otherwise would be, and also to retain its water; but as a set-off, it makes it taste more dry than it really is when it has parted with a certain quantity, such as always takes place in 24 hours. Baker's bread does not really lose weight much more rapidly than home-made bread, but it tastes very much more harsh and dry, and loses that elastic consistency which is peculiar to new bread of the baker's make, and to bread not more than two or three days old when made at home. Several companies have been started in London with the object of doing away with all adulteration, and of selling wholesome bread at the lowest possible price; but they have invariably failed in a

commercial point of view, and have not improved upon the quality either. In Birmingham, Carlisle, and some other towns the plan seems to answer; but not so in London, which has always been supposed to be much worse off than other places in the impositions of the bakers, who fix what price they like, and are most of them in league together.

841. THE WEIGHT OF THE QUARTERN LOAF being 4 lb., according to the Act passed in 1836, it should bear some relation in price to the equivalent quantity of flour, yet this is by no means always the case. It is quite true that a sack (or 280 lb.) of flour does not always turn out the same number of loaves; and that after a wet harvest, when the wheat is of a bad quality, the result in loaves is also small, as compared with the weight of flour; still this variation is not sufficient to account for the want of constant uniformity between the prices of the two commodities. There is no element in bread-making, besides the flour, of any consequence in the account, but coals and labour; but even with these corrections, the case cannot be substantiated that bread is always regulated in price by the prime cost of its elementary materials. The average number of 4-lb. loaves from a sack of good flour may be taken at 94, and the wages, yeast, and coals at about 4s.; so that to produce this number of loaves the price of a sack of flour must be added to the latter sum, which at the present price for best wheaten bread will be—flour 63s., added to 4s., making in all 67s. for 94 loaves, or, within a very small fraction, 8½d per loaf, which is 1d. per loaf only under the lowest price of *best* bread. This profit scarcely is sufficient for the support of the baker, and therefore not to be objected to by the consumer if the article were really made with this kind of flour; but the fact is, that even for best bread, the highest priced flour is not used, and that instead of paying at this time 63s. for his flour, he is buying it at about 56s. for his best bread, and at 48s. or 49s. for his household—giving him nearly threepence a loaf for profit on each. Now, I am by no means inclined to think that this is too much, when it is considered that there is the trouble of delivery to be incurred, and that in most cases the baker does not sell bread enough to fix the profit at less than this sum. The average business of a baker is seldom, probably, more than 20 sacks a week, and very often not so much; and as each sack will return him about 14s. profit, he will make a gross profit on his business, after paying for labour, coals, flour, and yeast, of £14 per week, or £728 a-year, from which are to be deducted the house-rent, keep of horse, wages *in delivery*, and *bad debts*, which must always make a considerable item in this business. If, on the other hand, he calculates on the lowest rate, the profit will be £364 per annum, subject to the same deductions; and this, on a smaller amount of business, is certainly not enough to make any man encounter the risk and trouble. Unfortunately, however, the trade, as a body, are not satisfied with these profits; and probably they cannot make them, unless they have capital enough to go to market with ready money, for if they are obliged to take credit with the miller they may not be able to obtain their flour at the above rates. Hence it is that many of them have recourse to the use of rice or potatoes, or both; and it is said that they adopt the following formula, or with some slight variation in its proportions:—Potatoes, of good and floury quality, are first boiled, then mashed with a little water and the addition of a little flour and yeast; this is left for about six hours covered up, which allows of considerable fermentation, and when the baker is satisfied that it is carried far enough, he dilutes the whole with water until it is thin enough to be strained through a sieve, by which he guards against the presence of any lumps of potato in the bread. The strained mixture is now worked up with flour into the proper consistence to form *the sponge*, which is the name given to the dough as ready for the division into loaves. In the course of the sponge-setting, however, more flour and water are added, as required; and it is at this time that the *alum*, *hards*, or *stuff*, are added—these being the several names for the same thing, and the base in each case being the first-named drug. The proportion of potatoes used varies greatly, but it is sometimes, I believe, nearly one-half of that of the flour, and very frequently one-third. Very often rice and potatoes are used in equal proportions, the compound being mixed with an equivalent in weight of flour; and this is said to make a very good bread, but rapidly becoming dry. When these substances are used, the profit upon each loaf, supposing their price to be relatively low, will be nearly cent. per cent. But it must, again, be remembered that these adulterations are chiefly practised in low neighbourhoods, where credit must be given, and where, in consequence, a considerable number of bad debts are incurred.

842. From the foregoing calculations it results, that the cost price of a loaf of pure wheaten flour, of good "seconds" quality, when this flour is 56s. per sack, is rather more

than 7½d.; and when made of good "thirds" flour, about 6½d. Hence, supposing the price of the *best* wheaten-flour to be 60s., whenever we find that bread is sold by the bakers at less than the above sums, with a fair addition of 1d. or 1½d. per loaf to each, we may conclude that adulterations are practised. At the same time, if we are able to economise by baking at home an article at less cost, we may be pretty sure that it is genuine, and therefore we may consider the saving a real one. By a reference to the published statements of the analyses made by Dr. Hassall, it will be seen that in every case alum was detected in London bread, and that even the League Bread Company, who professed to sell "pure unadulterated bread, full weight, best quality, and the lowest possible price," use this prejudicial drug, though, perhaps, not to the same extent as some other bakers. But, besides these adulterations by alum, it appears that in almost every case bread, as delivered to private houses, is deficient in weight, in many cases to the extent of several ounces in the 4-lb. loaf.

843. THE AMOUNT OF WATER taken up by the flour in making it into bread, according to an experiment conducted under Dr. Hassall's supervision, is as follows:—Flour, as used for bread-making, contains about 17 per cent. of water; and of this flour two pounds, when made into bread by the addition of water and German yeast alone, produced two pounds eight ounces and a half of bread. When two scruples of alum and half an ounce of salt were added, the same quantity of flour became two pounds ten ounces of bread; and when instead of two pounds of wheat-flour a pound and a half of the same quality was mixed with half a pound of rice-flour, with the addition of the alum and salt, the whole weight became two pounds ten ounces and a half. Baker's bread, therefore, may be considered to be composed of one-quarter water, as near as may be—that is to say, supposing that they use alum and rice, or potato-flour, or even alum alone. But pure bread without alum should be composed only of one-fifth water; and the consequence is, that we pay the price of bread for that quantity of water which is above the fifth of the weight of the bread. Dr. Hassall's experiment being made on the small scale, allowed only one-quarter of water in the loaf, but it is well known that a much greater quantity is really united with the bread when made in large masses, and that instead of obtaining 87½ loaves from the sack of flour, which would agree with his calculation, they really turn out from 90 to 98, or about 94 on the average.

844. THE ADULTERATIONS IN BREAD are to be detected in the same way as in flour, already described at page 278.

845. BROWN BREAD, as sold by the baker, is seldom a genuine article, but is made up by mixing bran or pollard with inferior flour. The consequence is that it soon becomes dry, and has not that sweet nutty flavour which is due to the presence of all the elements of pure wheat. Whenever this article is desired for invalid purposes, its manufacture should be entrusted to some person who can be depended on, or else it should be made at home, according to the plans set forth in the next chapter.

846. FRENCH BREAD is commonly sold in the shops in the shape of rolls for breakfast purposes, or for use at dinner. It is made with fine flour, milk, and eggs; and after baking, the surface is rasped, by which it is changed in appearance to a delicate pale brown. It is very light and wholesome when well made, and by many people is digested in preference to our English kinds.

847. BISCUITS are made without yeast, either with or without the addition of butter and sugar. Those made with flour alone, and the addition of a very small quantity of butter, are called hard or captains' biscuits; while sweet and buttery biscuits are sold as fancy biscuits, and are made in enormous quantities at various wholesale manufacturers', their qualities varying almost as much as the names of their makers.

848. UNFERMENTED BREAD is sometimes sold by the bakers as "digestive bread," or by some other name calculated to catch the eye of the dyspeptic patient. The mode of making and the use of this bread will be found at greater length in the next chapter.

849 IN PURCHASING BREAD at the baker's, the chief and only thing to be done is to select as honest a tradesman as can be met with within the near neighbourhood of the house to be supplied. It will be gathered from the foregoing remarks, that as the quality varies greatly, so the price is not the only test; but still it is undoubted, that a high price does not always imply good bread, nor does a moderately low one forbid the production of it. The good manager, therefore, will see that she has as good an article as her neighbourhood will afford at an average price, and will particularly take care that the weight is in accordance with the law—a loss of four ounces makes a difference of a halfpenny in the 4-lb. loaf, which is generally the variation between the higher and lower prices; and, therefore, while she fancies she is saving that amount, she may really be doing no such thing.

850. THE LAW relating to the making of bread is guided by 6 & 7 Wm. IV., c. 37, and

its provisions are assimilated to 3 Geo. IV., c. 106, which regulates bakers in the Metropolis. Bread may be made of any weight or size, but must be sold by weight only (French rolls and fancy bread excepted). Bakers to use avoirdupoise weight, and no other. Penalty for using false weights, £5. Bakers delivering bread by cart, &c., to be provided with scales and weights. Bakers convicted of adulterating bread liable to a penalty of £10, and to have their names and abodes advertized in the newspapers. Penalty for adulterating flour, meal, &c., £20. Bread made of mixed meal and flour is to be marked with the letter "M." Magistrates and peace-officers, by warrant, may search bakers' premises, and seize and carry away adulterated flour and meal; penalty for obstructing search, £10. Ingredients for adulterating flour, meal, &c., found on bakers' premises, subject the offender to a penalty of £10; and the like sum for every subsequent offence. Offences occasioned by the wilful default of journeymen-bakers subject them to fine or imprisonment. Bakers not to bake bread or rolls on Sundays, or sell bread or bake pies, &c., after half-past one o'clock in the afternoon; bakings may be delivered until half-past one o'clock, and not later, on Sundays, under the penalty of 20s.

SECT. 10.—GROCERY.

851. THE ARTICLES SOLD BY THE GROCER comprise a very miscellaneous list, of which the chief are—*tea*, *coffee*, *cocoa*, and *sugar*; to which, however, must be added, *spices*, *arrowroot*, *tapioca*, *sago*, *semolina*, *rice*, *raisins*, *currants*, &c.

SUB-SECT. A.—TEA, COFFEE, AND COCOA.

852. TEA, as sold in the shops, is the leaf of the tea-tree, dried and stored for use. These leaves are gathered at three or four different seasons, by which in some measure the different qualities of tea are produced, those first picked being most valuable, and the last coarse and large. The young leaves are narrow, convoluted, and downy; the middle-aged have their edges serrated and veined with more or less delicacy; whilst in the older leaves the serration and venation are more marked; and, in addition, some peculiar hoops are developed along the margins, which are readily seen when they are examined. All teas are divisible into black and green, depending partly upon the age of the leaves, partly upon the locality where grown, and partly upon the method of drying. Thus, the black tea is not only roasted in a shallow iron vessel, called a *kuo*, but it is also again submitted to the action of a charcoal-fire, in sieves. Green tea, on the other hand, escapes the second process. Teas are also *rolled* by the hand, when half dry. Black teas are known as *bohea*, *congou*, *souchong*, and *pekoe*; green teas, as *twankay*, *hyson*, *imperial*, and *gunpowder*. These qualities of black and green tea are chiefly dependent upon the age of the leaves when gathered. More varieties are known in the trade, but the above are the leading sections into which this article is divided. Common teas are artificially scented—as, for instance, by the cowslip, which is added to the tea in layers, both being previously dried, and alternately placed in the canister or chest. After some days the cowslips are removed by sifting, and the tea thus scented is mixed with other teas if too highly scented, or with more cowslips if not sufficiently so. This is the process for making cowslip hyson, but black teas are also similiarly flavoured, and with them the flower of the cowslip is reduced to a powder and actually mixed with the tea in the last roasting process, and left there. Besides the cowslip, other flowers are used to scent souchong teas, as the *Gardenia florida*, *Olea fragrans*, and *Jasminum sambac*.

853. AN INFUSION OF BLACK TEA contains, on analysis, *gum*, *saccharine matter*, *tannin* in large quantities, and *theine*, which last is identical with *caffeine*, both being important elements, and containing nitrogen. Green tea almost invariably contains some added matter, in the shape of glazing or colouring, consisting in most cases of *Prussian blue* or *indigo*, *turmeric powder* and *china clay*. Many other matters are occasionally used for the purposes of adulteration, which will be found described under that head. The amounts of gum and tannin contained in any infusion are good tests of its value, but the really useful principle is the theine, which is the cause of the peculiar effects of this important article of diet.

854. THEINE, CAFFEINE, THEOBROMINE, AND PIPERINE, are four vegeto-alkalis, identical in composition, and in their effects upon the human body. They are met with in the four most common articles in domestic use, namely, tea, coffee, cocoa or chocolate, and pepper, and in very few other vegetable substances. In making selection of tea, coffee, cocoa, and pepper, man has instinctively, or rather by experience, chosen those substances which will impart the greatest quantity of nitrogen, conjoined with tannin and other conservative principles. They are soluble in about one hundred parts of cold water, and much more readily in boiling water, or if an acid be present. In order to precipitate theine or caffeine, a decoction of common tea or of raw coffee berries, previously crushed, is mixed with excess of solution of basic

acetate of lead. The solution filtered from the copious yellow or greenish precipitate, is treated with sulphuretted hydrogen to remove the lead, filtered, evaporated to a small bulk, and neutralized by ammonia. The caffeine or theine crystallizes out in cooling, and is easily purified by animal charcoal. It forms tufts of delicate white silky needles, which have a bitter taste, melt when heated, with loss of water, and sublime without decomposition.

855. THE ADULTERATION OF BLACK TEA does not appear to be effected to any extent, according to the examinations made by Dr. Hassall. It has been supposed that other leaves are mixed with those of tea, and probably at one time the practice was common, but at present the low price of tea forbids the resort to this expedient in an economical point of view. While inferior black teas can be imported as low as 8½d. per lb., which is the present price, it is not likely that any other leaves will be substituted, unless it could be done in this country so as to avoid the duty; but as this is almost impossible, owing to the efforts of the excise, it results that no such attempt is made, and that the foundation of all the teas sold really consists of the leaves of the tea-tree in some shape. At one time exhausted tea-leaves were much used, persons being regularly employed to buy them up from the hotels and other places of large consumption, as much as 2½d. to 3d. per lb. being given for them when dry. They were then mixed with gum and some small quantity of tannin, and re-dried, after which they were faced with rose-pink and black-lead. The same cause, however, which forbids the substitution of spurious leaves also acts against the use of the exhausted leaves, namely, the low price of teas, which will not afford the outlay; for by the time that the exhausted leaves are gummed and tanned, and then faced, the value is brought up to that at which ordinary black tea may be bought; and as they are liable to be seized by the excise, the risk is greater than the profit. Nevertheless, the system is said to be pursued at the present day to some slight extent. Catechu appears to be sometimes added as a substitute for the tannin which is extracted from the exhausted leaves. Rose-pink, logwood, black-lead, and talc, or china clay, are also introduced into teas with a view to alter and improve their colour. Indigo and turmeric-powder are likewise employed in small quantities for black tea, and in very considerable proportions for green tea; and for the adulteration of which, the following materials also are used, chiefly in China, viz.: Prussian-blue, mineral-green, verdigris, arsenite of copper, chromate of potash, chrome-yellow, Dutch-pink, chalk, gypsum, and steatite or soapstone. Some of these are comparatively innocent, as the steatite, Prussian-blue, Dutch-pink, chalk, gypsum, turmeric-powder, black-lead, and china clay; but the chromate of potash, chrome-yellow, arsenite of copper, verdigris, and mineral-green are of a very poisonous nature, being all of them active salts of lead, arsenic, or copper. From the result of Dr. Hassall's analysis, it appears that of thirty-four samples of black tea as imported, all were in a genuine state as regards the leaf itself, but portions were adulterated by facing the surfaces of the leaves "with black-lead, an irridescent powder resembling mica, indigo, and turmeric," also by the addition of imitation-tea made out of tea dust, sand, &c. With regard to black tea as retailed, it appears that out of twenty-four samples, twenty were genuine, and four adulterated, though he thinks there was no blame attached to the vendors, they being, in all probability, wholly unaware of the fact of these particular descriptions of tea being adulterated or faced in the manner described. As might be expected, the fabricated teas seized by the excise are shown to be composed of various articles, other than genuine tea, as exhausted tea-leaves made up with gum, catechu, and facing. British leaves of aloe, sumach, &c., mixed with catechu and tea-dust, are also shown to exist among this kind of fraudulent tea. Lastly, in green tea, Dr. Hassall proves that out of thirty samples of retailed green tea, all were more or less adulterated, some with what is called "lie-tea," others with one or other of the previously mentioned foreign substances. In no case did he find green tea depending for its colour upon natural causes. In consequence of the discovery of these facts, Dr. Hassall recommended a reduction of the duty on all kinds of *black tea*, to the extent of at least one-third, and the continuance of that on *green tea*. Also, that *lie-tea* (which is imported from China, and pays duty as tea), inasmuch as it consists of inferior leaves, mixed with sand, and very often the leaves of other plants, should be prohibited, as well as all teas mixed with it. These recommendations have been in a great measure carried out, and it is believed will shortly be followed to the full extent desired by him. The duty will soon be 1s. per lb., so that black teas of good quality may then most probably be bought at 2s. to 2s. 6d. per pound.

856. THE METHODS OF DETECTING THE ADULTERATION OF TEA are somewhat intricate, and above the management of all but professed chemists and microscopists.

Dr. Hassall goes at great length into this subject, and to his book I must refer my readers for full particulars of the natural and microscopic appearance of the leaves when softened and unrolled, and of the substances contained in the tea, by which the fictitious additions are distinguished from the genuine article. The great safeguard is to avoid green tea altogether, and to use black tea obtained from houses of good reputation. What is really wanted is a good practical test, suited to purchasers, and this can only be obtained by the use of the natural senses applied to an infusion, as practised by the dealers themselves. In buying teas, a good guess may be made by the smelling and inspection of the dry tea; no one, however, depends upon this, but it is usual to make an infusion from equal quantities of each sample, and compare them in all the sensible qualities of colour, taste, and smell. These tests may, in a similar way, be used by the family housekeeper, but she seldom has recourse to them in the grocer's shop, who could scarcely be expected to make a dozen cups of tea for each of his customers, and therefore she is compelled to buy what he recommends, and to postpone a trial of its qualities until she arrives at home, when she can readily compare two equal quantities by infusing them in a small teapot separately, and examining them together. It is scarcely fair to try one tea to-day and the other to-morrow, as the variation in the state of the stomach will often make a difference which will upset all calculation.

857. IN MAKING TEA for this trial, as well as for general use, the best plan is to warm the pot with the dry tea in it by placing it on the hob, or in the summer time by pouring water into it, and after pouring it out again, adding the tea. When economy is to be consulted, the addition of five grains of carbonate of soda makes the infusion much stronger, but all the strength of the tea is brought out in the first brewing. After the tea, with or without soda, is introduced, boiling water should be poured on it, taking care that the tea is completely covered and not floating at the top, and not quite filling the pot. After ten minutes the pot is to be filled up and the tea poured out, but it should never be completely emptied until the last cup is to be obtained from it, adding fresh water from time to time in preference. Boiled tea is stale and flat, though not unprofitable, as the decoction may be obtained stronger than the infusion.

858. THE WHOLESALE PRICE OF TEA at the present time is as follows, to which must be added the duty, amounting now to 1s. 9d. per lb., and the retailer's profit of from 10 to 25 per cent.:—

WHOLESALE AND RETAIL PRICES OF TEAS.

	Wholesale Price.					Retail Price.				
	s.	d.		s.	d.	s.	d.		s.	d.
Congou	0	8½	to	1	5	2	8	to	3	10
Souchong	1	2	,,	2	6	4	2	,,	4	6
Pekoe	1	6	,,	2	6	4	6	,,	5	6
Orange pekoe	1	0	,,	1	6	4	0	,,	4	8
Scented pekoe	1	6	,,	2	8	4	0	,,	5	0
Oolong	0	10	,,	2	0	3	0	,,	4	6
Hyson	1	6	,,	4	0	3	2	,,	5	10
Young hyson	0	9	,,	1	0	3	0	,,	3	6
Twankay	0	10	,,	2	9	3	0	,,	5	0
Gunpowder (Canton)	0	9	,,	1	6	3	0	,,	4	6
,, (hyson kind)	1	4	,,	4	0	3	2	,,	6	0
Imperial	1	0	,,	3	6	3	0	,,	5	6
Twankay and hyson-skin	0	8	,,	1	2	2	6	,,	3	4

859. SEVERAL SUBSTITUTES FOR TEA, or improvers to its strength, are offered to the public under the names of "La Veno Bono," "Chinese Botanical Powder," &c.; but they possess no element likely to be of any service, and as they chiefly contain catechu, they are prejudicial by causing constipation of the bowels and flatulence, as well as general disorder of the digestive organs.

860. COFFEE, used for similar purposes to tea, and containing a similar nitrogenized principle (called in this case *caffeine*, instead of theine), is the berry of the coffee-tree, which grows in America, the East and West Indies, Ceylon, Brazil, and Arabia, as well as some other warm climates. The plant is usually from four to five feet high, and the berries, which are gathered in the autumn, are of a dark red colour. Each tree yields about a pound or two of these berries, which contain within their pulp a pair of seeds enclosed in a thin membrane, and these, after being rubbed, washed, dried, and winnowed; constitute the raw coffee as imported and sold by

the grocers when their customers intend to roast it themselves. When it is sold as roasted, or as ground coffee which implies a previous roasting, these raw berries are submitted to the action of fire, in a closed chamber, until they are slightly charred, when they are cooled without exposure to the air, and then coarsely ground, and, when not wanted for immediate use, they are preserved in tin canisters. As the oily matter contained in the berry is very volatile, it is desirable to avoid keeping either the whole berry or the powder longer than is necessary, and especially the latter, hence the grocer professes to roast and grind daily, and those who are in large business generally do so. The grinding at all events ought not to be more than sufficient for the daily supply; and it is in all cases better for the private customer to buy the berries either raw or roasted and grind them himself, rather than risk not only the loss of aroma by the exposure to the air, but also the adulteration with chicory, which is so generally practised.

861. The Composition of the Coffee Berry is of such a nature that it can readily be discriminated by the microscope from the substances with which it is adulterated, but by ordinary means such is not the case. There are probably tests by which chicory may be detected, but roasted beans or corn, when ground, can scarcely be known from inferior coffee by any mode of examination, except that adopted by Dr. Hassall. Two parts are plainly to be seen in the berry, as in all others of the same class—the substance and the investing skin; and these each present a peculiar appearance under the lens, for which see Dr. Hassall's very beautiful woodcuts. But, besides this, there is one fact which may serve as a guide, and that is, that the texture of the substance of the berry is a long time in becoming soft, whether it is roasted or raw, whilst chicory readily softens and becomes spongy, so that even in the ground state the two may be distinguished. The reason of this difference lies in the fact, that the berry contains a considerable quantity of essential oil, to which it owes its peculiar smell on roasting, and which prevents its imbibing water and becoming soddened by it, whereas chicory has none of this, and therefore at once submits to the action of this fluid.

862. Adulteration of Coffee by chicory, corn, and other articles, is practised to such an extent, that even after three months' notice of his intention were given by Dr. Hassall, of forty-two samples examined by him, thirty-one were adulterated with chicory; two were mixed with other matters not clearly made out; and of these many of the samples were almost wholly composed of chicory. This was a great improvement upon the result of his first examination, showing that at that time, before notice was given, coffee was much more extensively adulterated, not only with chicory, but with roasted corn, beans, and potato-flour. Canister-coffee seems to be adulterated as much as any, though it has been purchased by the *Lancet* Commissioner of several respectable houses in a state of purity. It appears, therefore, that the only mode by which the purchaser can ensure a good and genuine article, is to purchase his coffee in the berry, and either in the raw or roasted state. An attempt has been made to imitate the shape of the berry by compressing the chicory in a mould, but the fraud is easily detected by any one possessed of eyes and hands, and therefore need not enter into the calculation. If the berry is raw, a roaster must also be bought, but as great care is required in roasting to guard against too great a heat, it is as well to buy the coffee ready roasted, but unground. A mill is very readily worked, and in a very few minutes the day's consumption may be ground, and at once put into the pot. In this way only can the pure article be obtained with certainty, and as it is plain and easy to all, they can have no excuse for its non-adoption.

863. The Presence of Starch-granules in corn, beans, and potatoes, indicates them when under the microscope; and, therefore, when this instrument is available, *and can be properly handled*, coffee containing any of these comparatively innocent ingredients may be detected. But though these are not positively injurious, the vendors are fraudulent, because neither corn, nor beans, nor potatoes contain caffeine, which, as I before remarked, is the essential ingredient in coffee, as theine is in tea. Both of these similar principles exert a marked influence on the nervous system, and brace it so that it is capable of bearing up against fatigues and exposures far better than when stimulated by alcohol. This has now been proved by direct experiment in many cases; and it is an undoubted fact, that tea and coffee are of vast service as general drinks, and that those substitutes for them which are deficient in theine and caffeine are of no more use than toast-and-water.

864. The Wholesale Price of Coffee is now as follows, to which must be added 4d. per lb. duty and the retailer's profit:—

		s.	d.		s.	d.
Jamaica coffee,	per cwt.	46	0	to	90	0
East India ...	,,	48	0	to	70	0
Mocha	,,	68	0	to	90	0

		s.	d.		s.	d.
Ceylon ...	... per cwt.	48	0	to	80	0
St. Domingo ...	,,	47	0	to	49	0
Costa Rica ...	,,	61	0	to	74	0
Brazil	,,	39	0	to	58	0

The Retail Price is as follows, as sold by the most respectable firms:—

		s.	d.
Good Ceylon coffee	per lb.	1	1
Good plantation	,,	1	2
Finest ditto	,,	1	3
Finest South American (Costa Rica)	,,	1	4
Choice mountain flavoured ...	,,	1	5
Best old Mocha	,,	1	6

The wholesale price of chicory is about 16s. to 20s. per cwt.

865. **Chicory**, unlike coffee, corn, or beans, but like the potato, is a root, being that part of the wild endive, a native plant of this country, but supposed to have been originally introduced from India or China. It grows readily in poor sandy soils, and yields about ten or twelve tons per acre in the raw state, which when dry will only make about one ton, or somewhat less. The roots are washed, sliced by a machine, and dried, after which they are powdered, and then sold at about 4d. per lb. But chicory itself is subject to adulteration, carrots, mangel-wurzel, and parsnips being employed for the purpose, as well as burnt-sugar, which however is only added to give colour, being in fact three times the price. Dr. Hassall describes several other substances as being used for the purpose, but not on his own authority, as far as regards the most offensive of them, viz., oak-bark tan, mahogany sawdust, baked horses' and bullocks' livers, and Venetian red. It is, however, doubtful whether these are used to any extent in adulterating either coffee or chicory; for while this last article is to be bought at 4d. per lb., one would suppose there would not be much temptation to go lower in the scale of fraud. It must, however, be remembered that the sale of chicory is legal, *if sold as such*, and that it is only when it is sold as coffee, or mixed with it when the article professes to be pure coffee, that a fraud is committed. No one conversant with the subject imagines that chicory is either useful or wholly innocent, but no one either imagines that it is so prejudicial to health as to make the legislature forbid its use. Indeed, while tobacco is encouraged, it would be inconsistent to forbid chicory, which is comparatively innocent; and therefore all that can be done is to enact that those who desire pure coffee shall have it when they ask for it, as far as this can be effected by legislative interference.

866. **Cocoa and Chocolate** are both prepared from the seeds of the *Theobroma cacao*, which is cultivated in the West Indies and in South America. The seeds are enclosed in pods, resembling in some respects a cucumber, each of which contains a considerable number of them, extending on the average to about twenty-five or thirty. These seeds are somewhat like large almonds, and vary a good deal in appearance and quality, according to the place from which they are imported. *Cocoa* is prepared from the beans or seeds by first freeing them from the surrounding pulp, and then gently roasting them in an iron cylinder, with holes in its end to allow the vapour to escape, being, in fact, an apparatus similar to a coffee-roaster. When the aroma is well developed, the seeds are ready for conversion, and they are turned out of the cylinder cooled and freed from their husks, after which they are ground, and become the "cocoa" of the shops. *Chocolate* is very similar in its composition to cocoa, but it is manufactured into cakes, with the addition of sugar, starch, or arrowroot, in order to bind it, and or vanilla or cinnamon, to add to its flavour.

867. **The Composition of the Cocoa Seed**, deprived of its husk, is more than one-half of it fatty matter, the remainder being made up of starch, gum, lignine, theobromine (analagous to theine), albuminous matter, and a red colouring matter. It is, therefore, an exceedingly nourishing food; and, when suited to the particular stomach, well adapted to strengthen and fatten invalids who have lost flesh from disease or bad living. Cocoa-beans, as roughly ground, are sold as *cocoa-nibs*; when crushed between rollers, they become *flake-cocoa*; made up with starch and ground into a powder, they are *homœopathic-cocoa*, or *breakfast-cocoa*, *soluble-cocoa*, *patent-cocoa*, &c.; and, again, with the addition of the substances already mentioned, and converted into cakes, *chocolate*, or *vanilla chocolate*, &c.

868. **Cocoa and Chocolate** are adulterated to a considerable extent, but not in the same injurious manner as tea, or to the same extent as coffee. Of fifty-six samples examined by Dr. Hassall, eight only were genuine, forty-three contained sugar, and forty-six starch, in the shape either of wheat, potato-flour, or sago-meal. Chocolate professes to be a manufactured article, and therefore it is not surprising that it is found to contain sugar, sago-meal, arrowroot, &c. These substances can only be detected by the microscope, and as there is little opportunity of buying, roasting, and grinding the seeds, the public must content themselves with relying upon the character

of the vendor. Cocoa nuts are sold by retail, at 7d. and 8d. per lb., so that they might be roasted and ground, and I do not see why this might not be done by any one who is in possession of a coffee-roaster, and is tolerably handy in its use. There is, I believe, considerable practice required in order to arrive at the proper degree of heat necessary for the operation, and also in removing the shells, and this probably is the reason why the attempt is not made. Moreover, the adulteration is not to any great extent, and the article sold is generally a pleasant and agreeable one, and without any deleterious compound. There seems to be no fraudulent reason for the addition of sugar, or arrowroot, or sago, since they are not cheaper than cocoa, and hence it can only be in order to improve the quality that they are added. The latter articles, I believe, make it taste more smooth and soft in the mouth, and the sugar is said to preserve it from injurious fermentation.

869. THE WHOLESALE PRICE OF COCOA-SEEDS is as follows, to which must be added 1d. per lb. for duty, and the retailer's profit, as well as the loss in roasting, which is about 8 per cent.:—

		s.	d.		s.	d.
Trinidad cocoa,	per cwt.	38	0	to	47	6
Grenada ...	,,	36	0	to	46	0
Guayaquil ...	,,	44	0	to	45	0
Para	,,	36	0	to	38	0

THE RETAIL PRICES are as follows:—

		s.	d.
Dietetic cocoa	per lb.	1	0
Soluble cocoa	,,	0	6
Finest cocoa...	,,	0	8
Fry's patent cocoa ...	,,	1	0
Cocoa nuts	,,	0	8
Cocoa nibs	,,	0	10
Chocolate paste	,,	1	7
Chocolate powder, in tins	,,	1	5
Chocolate powder, loose	,,	1	1
Best plain chocolate ...	,,	1	0

870. TEA, COFFEE, AND COCOA are sold in enormous quantities to all classes, and are equally useful in keeping up health and nervous power under all circumstances. Tea is not much used except in private houses and hotels; but coffee is now sold in prodigious quantities in coffee-shops, and in pastry-cooks' shops also, throughout London and the large towns. Instead of going in all cases to the public-house for his gossip or his paper, recourse may now be had by any one to the coffee-house, where for a small sum, varying from 2d. to 6d., a cup of coffee and a sight of the periodicals of the day may be obtained. Both coffee and fermented liquors seem to have a tendency to produce a desire to smoke tobacco, or at all events most of those who frequent either coffee-shops or taverns are addicted to this habit, and therefore it is not easy to compare mere coffee-drinkers with mere beer or spirit-drinkers, and I am inclined to believe that those smokers who confine themselves to coffee, smoke to a greater extent than those do who imbibe fermented liquors. I believe, also, that tobacco in excess is more injurious than either spirit or beer, and therefore so long as its use is mixed up with that of coffee, the full benefit of the change will not be felt.

SUB-SECT. B.—SUGAR, TREACLE, AND HONEY.

871. SUGAR, as consumed in this country, is the produce of the sugar-cane, some of it being imported from the West Indies, other qualities from Brazil, Porto Rico, and Manilla, and others again from the East Indies, the Mauritius, and Java. From this wide field it will appear that a considerable proportion of our sugars are still the produce of slave-labour; and such a lamentable result seems to be inevitable as long as we require an amount of sugar which free labour alone is not able to produce.

872. THERE ARE TWO KINDS OF SUGAR, which are chemically different, and are known as cane-sugar and grape-sugar, the former being obtained from the sugar-cane, the maple-tree, the root of the beet, the mallow, and some other forest trees and cultivated plants; while the latter is contained, in varying quantities, in those fruits which are more or less sweet, especially in the grape, fig, plum, &c. HONEY contains a portion of each, as in fact do most sweet substances, and even the cane-sugar itself, especially the moist sorts, in the shape of TREACLE, which is composed almost entirely of grape-sugar.

873. CANE-SUGAR consists, like all sugars and similar compounds, of carbon, hydrogen, and oxygen, and is therefore free from nitrogen altogether. The proportions of these in crystallized cane-sugar are stated in the usual way by the following formula; Carbon 24, hydrogen 22, oxygen 22. It is to be found in the several canes, trees, and roots mentioned in the last paragraph, from which it is extracted by various processes, according to the nature of the substance containing it. It is perhaps most readily obtained from the maple-tree, which in America is found extensively in the natural forests, and only requires tapping with an augur, and the insertion of a small pipe, to cause the saccharine and limpid sap to flow out, and by the application of heat alone in an iron vessel suspended over a fire, an excellent crystallized sugar is produced. When sugar-canes are the source of sugar, a mill is used

to crush them between its rollers, and the expressed juice being collected is slowly evaporated, until by the aid of the hydrate of lime, the sugar is separated in a crystalline form. The lime acts by coagulating the albumen, and separating it, together with the earthy phosphates and waxy matter. The resulting mass is partly composed of *raw* or *Muscovado sugar*, and partly of *molasses* or *treacle*, the latter being drained off, and leaving the former behind. This raw sugar is further refined by re-dissolving it in water, and adding albumen, in the shape of blood or white of egg, with a little lime-water, and heating the whole till it boils; the albumen acting in the same way as in other cases of clarifying, by entangling the foreign bodies in its meshes as it is being converted from the fluid to the semi-solid condition. The solution, though now clear, is still coloured, and requires to be passed through animal charcoal, in order to get rid of this adjunct. After which, the solution or syrup is evaporated again, and poured into conical earthen moulds, where it solidifies in process of time, and becomes that irregular crystallized mass known as *loaf* or *lump sugar*. This requires to be still further cleaned, by passing through it a stream of clear syrup, after which it only remains to dry it in a stove, and the loaf is fit for use. Sometimes a fine and soft *clay* is placed over these moulds, serving still further to assist the clarifying process by straining the syrup. When crystallization is suffered to take place slowly, and without disturbance, a more perfect crystal is produced, known as *sugar-candy*. In most cases evaporation is conducted in close boilers exhausted of air, called *in vacuo*, by which the boiling point is reduced from 230 degrees to 150 degrees Fahrenheit, and the risk of burning is materially diminished. On the continent of Europe, beet-root is cultivated largely, with a view to produce sugar, but the process is tedious and expensive, and the sugar cannot compete in price with that from the sugar-cane. Pure cane-sugar separates from the syrup in crystals, having the figure of a modified oblique rhombic prism, of a large size, transparent, and nearly or quite colourless, according to the condition of the syrup. It has a pure, sweet taste; is soluble in one-third of its weight of cold water, and in a larger quantity of alcohol. When moderately heated it melts, and solidifies in cooling into a transparent mass, without form, known as *barley-sugar*. On the application of a higher degree of heat it is decomposed, and more or less blackened or browned, and this effect is also produced by the long-continued boiling of the solution at a high temperature, which also tends to prevent its crystallizing. In this last condition it is well known as *caramel*, and is used for colouring spirits, wines, &c., containing a smaller proportion of hydrogen and oxygen. Carbon 24, hydrogen 18, oxygen 18.

874. **Grape-sugar**, known in chemistry also as *glucose*, consists of a larger proportional of hydrogen and oxygen than cane sugar or caramel, described in the last paragraph. For grape-sugar itself, the formula is thus represented:—Carbon 24, hydrogen 28, oxygen 28. It may be extracted from the juice of sweet grapes, or from honey, of which it forms the solid crystalline portion, by washing with pure alcohol, which dissolves the fluid syrup; or it may be artificially prepared by chemical agency from starch, woody fibre, &c. Grape-sugar is readily distinguished from cane-sugar, by being less sweet and more insoluble in water; also by the difference in the shape of its crystals, which are never of definite angular forms, but in granular warty masses, which seldom present any crystalline form at all. It resembles cane-sugar in being nearly white. when pure, in melting, and in suffering the same discolouration by heat. Cane-sugar combines readily with lime, baryta, and oxide of lead, while grape-sugar is with difficulty made to unite with them. Besides these distinguishing marks, the two may be known from each other by taking a portion of the solution to be tested, and mixing with it a solution of sulphate of copper, and a solution of caustic potash, both being in excess. A deep blue liquid is the result in any case, which, when heated, indicates the kind of sugar present by the following appearances:—If containing cane-sugar, at first but little change is produced; but after a short time small quantities of red powder fall to the bottom, in spite of which the liquid retains its blue colour. The presence, however, of grape-sugar is at once indicated by a copious greenish precipitate, which rapidly changes to scarlet, and afterwards to a deep reddish brown, leaving a nearly colourless solution. By this test, after a little experience, the proportional quantities of each may be discovered in any solution according to the shades of colour in the deposit.

875. **Liquorice Sugar** is another variety of sugar which is found in the root of the liquorice plant, and is soluble in water, but refuses to crystallize. A remarkable fact is, that it cannot be made to ferment.

876. **Milk Sugar** is another curious sugar, found in milk, and composed of exactly equal proportionals of carbon, hydrogen, and oxygen. It is obtained in large quantities from whey, by evaporating it to a syrup, and purifying the sugar, which

crystallizes out, by animal charcoal. It presents the form of a four-sided prism, and is very hard, white, and transparent. The taste is very slightly sweet, and it feels gritty to the teeth when undissolved. It also is not readily fermented.

877. **The Sugar of Manna** is contained in the substance known as manna, which is an exudation from a species of ash. This sugar is fusible without loss of weight, is readily dissolved in water, has a strong and powerfully sweet taste, and has no purgative qualities, which reside in the other elements of the manna. This sugar, like that of liquorice, refuses to ferment.

878. **The Impurities of Cane-sugar** consist of fragments of the sugar-cane, vegetable albumen, blood (from the material used in refining it), an animalcule peculiar to it, woody fibre, and starch; besides which may be enumerated, lime, lead, iron, sand, and salt, all of which are found in the raw sugar, and but seldom in the refined specimens, or loaf sugar, unless these contain a portion of the molasses still adhering to their crystals. Some of these impurities are owing to the ordinary processes of manufacture, and are unintentional, while others are due to those wilful adulterations called in the trade "handling." This term is ostensibly applied to the mere mixing of different qualities of sugar together; but too often it degenerates into an introduction of other substances, either directly or indirectly, and it cannot be justified when this is the case. These adulterations are shown to occur to a very great extent in the raw sugars sold in our shops; and as they are scarcely practised at all in white or lump sugar, the public can avoid them by purchasing the latter article.

879. **The above Impurities** may be detected by various methods, some of which are easily practised by the public, while others are confined to the microscopist and the chemist. To the two last it is needless to allude here further than to mention that by their aid good and pure sugar may be with certainty distinguished; and for the details of the methods used in the processes, I must refer to Dr. Hassall, and to the chemical writers of the day. But, besides these, the ordinary senses serve to point out several adulterations, as, 1st, pure raw sugar is light in colour, highly crystallized in large grains, and free from moisture, whilst the opposite condition is marked by opposite qualities, the sugar being earthy, damp, and heavy. To the touch, a good sugar should feel dry, and free from stickiness or clamminess; and when folded in paper it ought not to render it moist, and stained. Coarse and thick brown paper is used by the grocer to avoid showing this defect, which is very perceptible when thin and porous paper is used as a wrapper. This moistness is due to the presence of water in excess, which is of no value to the consumer, and yet is paid for at the price of sugar.

880. **In Purchasing Sugar**, therefore, the public should, as advised by Dr. Hassall, select either lump-sugar in any degree of coarseness which they can afford, or else the well-crystallized varieties of raw sugar, which are not readily handled, and thus mixed with inferior qualities. It is now, and has for some time been, the practice for the grocer to sell his sugar at cost-price, relying upon his tea for his profit; but this is the fault of the trade, and the public are not responsible for it. For this reason many of those grocers whose high and honest dealings have insured a command of the trade, refuse to sell sugar at all, and confine their attention entirely to tea, spices, arrowroot, &c. There can be no doubt that the public would much prefer to pay a trifle more for a genuine article; and, indeed, as it would go a great deal further, it would really be as cheap, for no quality so soon tells its own tale as this. Articles must be sweetened to the palate, and if a pound and a half of any kind of sugar will answer the purpose of two pounds, the intention is fulfilled, and a saving of the differential quantity is effected. Good cane-sugar, which possesses the power of sweetening in the highest degree, is required by our housekeepers; and if its place is partially supplied by starch, ground cane, flour, sand, or any other substance, in proportion to the adulteration will she be obliged to increase the quantity employed.

881. **Honey** is readily to be procured in the shops, but its quality will be found fully described under the article on bee-keeping in the next chapter.

882. The varieties of sugar known in the trade, and their wholesale prices, are as follows, in which is comprehended the duty, which is 13s. 9d. per cwt. for raw, 15s. for clayed, 17s. 6d. for white, and 20s. for refined. Molasses pay 5s. 3d. per cwt.

Price of Sugar per Cwt.

Single refined—	s.	d.		s.	d.
Brown lumps	51	6	to	52	0
Grocery ditto	53	0	,,	54	6
Patent—					
Double loaves	54	0	,,	0	0
Hambro' ditto	52	6	,,	55	6
Tittlers	52	6	,,	54	6
Wet lumps	47	6	,,	50	6
Pieces	41	6	,,	46	0
Bastards	34	6	,,	39	6
Crushed (bond)	34	6	,,	35	0
Dutch crusted (bond) ...	32	0	,,	34	0

West India raw—	s.	d.		s.	d.
Fine yellow	42	6	to	43	6
Good ditto	41	0	,,	41	6
Low to mid.	40	0	,,	40	6
Good brown	39	0	,,	39	6
Brown	37	6	,,	38	6
Crystallized	39	6	,,	44	6
Barbadoes	37	0	,,	44	6
Mauritius—					
Brown	45	0	,,	50	6
Yellow	40	0	,,	44	0
Grainy	39	6	,,	46	6
East India, Bengal—					
Good and fine white ...	46	0	,,	47	0
Low and mid. white ...	43	0	,,	45	0
Yellow	39	6	,,	40	0
Brown	34	6	,,	37	6
Dobah and grainy ...	42	0	,,	52	0
Madras & Penang, brown	33	6	,,	39	0
Yellow	38	0	,,	42	0
Fine	42	6	,,	45	0
Crystallized	40	6	,,	51	6
Havannah—					
White (bond)	30	6	,,	34	6
Brown and yellow ...	38	0	,,	51	0
Brazil, white	44	6	,,	46	0
Brown and yellow ...	37	0	,,	42	6
Manilla	36	0	,,	40	0
Java	39	0	,,	50	0
Porto Rico	37	0	,,	44	0
TREACLE, British	20	6	,,	21	0
Patent	20	6	,,	00	0
Inferior from West India	18	0	,,	00	0
East India	17	6	,,	00	0

By an examination of this list it will appear that single refined sugar is selling wholesale at 53s. per cwt., or rather more than 5½d. per lb., which is actually the retail price of the same article. The coarsest West India brown is also 37s. 6d., or 4d. per lb.; and here, again, every grocer's shop furnishes an equal article by retail. Unless, therefore, they avail themselves of adulteration, or of some cabalistic method known only to the trade, they really do, as they allege, sell this article at the same price as they give for it, which no one can expect or wish them to do who values what is right between man and man.

SUB-SECT. C.—SPICES.

883. THE ORDINARY SPICES which are used in housekeeping, and are sold at the grocer's are *pepper* (white, black, and cayenne), *mustard*, *ginger*, *nutmegs*, *mace*, *pimento* or *allspice*, *cloves*, *cinnamon*, and *cassia*. All of these spices are more or less pungent to the taste and stimulating to the stomach, and are used as additions to food, not as food itself. For these qualities they depend upon an essential oil in most cases, varying in each particular case. Pepper, however, has a nitrogenized principle, as already mentioned, similar in composition to theine and caffeine, and called *piperine* (see par. 854).

884. PEPPER is the produce of two allied plants (known as *Piper nigrum* and *longum*), and the part used is the berry, dried in the sun. *Black* and *white pepper* are both obtained from the berry of *Piper nigrum*; the former being the entire berry, ground, while the latter consists of the berry deprived of its outer covering, or husk, before it is reduced to powder. Long pepper is not ground, and is not much used in the present day. Peppercorns, being these berries, are imported from Penang, Malabar, and Sumatra. The best are those which are not too small, nor too much shrunk in drying, but which feel heavy in the hand, and sink in water. In looking at a section, the outer part, which is black, or reddish-black, is easily distinguished from the inner or central, which is more or less white, and brittle, hard towards the exterior, and soft and powdery towards the centre. In separating these parts, as for the purpose of procuring the white pepper, an inner reddish covering remains attached to the internal white structure, and this being ground up with it, is faintly indicated in the pure white pepper-powder by small reddish specks. The active properties of this spice depend upon an *acrid resin*, an *essential oil*, and a substance before alluded to, called *piperine*. The outer cortical part contains the resin, in the inner coat lies the oil, and within the internal or white structure is the *piperine*.

885. PEPPER, both black and white, is adulterated with a variety of articles—as, the flour of linseed, mustard, wheat, sago, and arrowroot. Pepper-dust, also, being the sweepings of the floors of warehouses, and known as P.D., is largely used in making up low-priced pepper. Powdered cayenne is likewise said to be used, but, according to Dr. Hassall, not to any extent. Chemistry and our natural senses are greatly at fault in detecting these adulterations; and the microscope is the chief means upon which reliance can be placed, and, as is proved, a very sufficient one.

886. CAYENNE PEPPER is composed of the pods of several species of *capsicum*, which is an annual herbaceous plant, a native of America, but cultivated in the West and East Indies, and to some extent in this country. Each pod is made up of three parts, an outer skin, an inner parenchymatous substance, and a quantity of small seeds. All these are ground up to constitute the pepper sold as cayenne, but it is to the first that it chiefly owes its pungent taste. It contains a very active principle which is called *capsicin*, and of which a very minute quantity, even as little as half a

grain, diffused throughout a room will set a whole party of people sneezing.

887. **This Pepper** is far more subject to adulterations than black and white pepper, and is in fact scarcely ever free from mixture either with red-lead, red-ochre, or common salt; four only out of ninety-eight samples examined by Dr. Hassall being perfectly genuine; thirteen presented red-lead, often in poisonous quantities, and in seven Venetian-red, red-ochre, or brick-dust, were found. Six of the samples contained salt in large quantities, with rice and colouring matter, and in the same number also appeared rice mixed with turmeric and cayenne, and coloured with red-lead or some ferruginous earth. It is said that this pepper is often imported in a ground state, and therefore a good deal of this sophistication is due to foreign roguery. The mineral ingredients are easily detected by chemical means, as red-lead, vermillion, &c.; but for most of the other articles the aid of the microscope is again required.

888. With a knowledge of the difficulty in detecting adulterations, it behoves us all to deal for our peppers only with those who are of high character and standing in the trade; but as our senses tell us pretty clearly the strength of the spice, and as all the adulterations of black and white pepper are tolerably innocent, no harm accrues, except to the purse, from the substitution of a weak spice for a strong one. In the case, however, of cayenne pepper, the presence of red-lead, vermillion, or other mineral colouring-matter is of serious importance, and should be cautiously avoided by a careful dealing with honest tradesmen.

889. **Mustard** is obtained from the plants known as the black and white mustard plant (*Sinapis nigra* and *alba*). The former of these has smooth seed-vessels, and reddish or blackish-brown seeds, which are very pungent; while the latter has rough or hairy pods and yellow seeds, less pungent than those of the black mustard.

890. **The Seeds of the Black Mustard** are composed of cellulose matter, containing in addition a volatile and a fixed oil of mustard; also, two peculiar substances known as myronic acid and myrocene, all of which are deficient in white mustard seed. The fixed oil exists in the seed, but the volatile oil is formed in the same manner as the essential oil of bitter almonds, by the joint action of water, and a peculiar coagulable albuminous matter, called *myrocene*, upon a substance very imperfectly known, which is termed *myronic acid*. This acid has no smell, and is not volatile, but is bitter to the taste, and contains *sulphur* and *nitrogen*. Heat coagulates myrocene, which is necessary to the formation of the essential oil, and hence mustard should always be mixed with hot water to develop its pungent powers properly.

891. **Adulteration** in this article seems to be the rule, and a pretty invariable one; for in no single case did Dr. Hassall find pure mustard-seed sold in London. The nature of the admixture was in nearly all cases the same, genuine mustard being more or less mixed with wheaten flour, and coloured with turmeric. Even in the case of an article which was specially sent up from Newcastle-on-Tyne, as a perfectly pure specimen, a very small quantity of turmeric was discovered, which the manufacturer afterwards candidly admitted was added to the mustard, for the purpose of heightening its colour. This admission must be highly gratifying to the *Lancet* Commissioners, as the quantity was only two ounces in fifty-six pounds, or one part in 448.

892. **In Purchasing Mustard**, there is no guide short of the microscope but the palate, as the full power is not developed until the flour is mixed with hot water. The adulterations are, however, only of importance, as far as the money-value is concerned, as the turmeric is innocent enough of all other mischief. Most people can judge of the strength of this spice when it is used, and they may therefore readily take this as their guide in dealing with their grocer for future orders.

893. **Ginger** is cultivated in Asia, Africa, and the tropical parts of America, and is the root of the *Zingiber officinale*, a perennial plant, of which the stem reaches to the height of three or four feet. The roots are dug up at the end of the first year; they are well washed, and then they are stripped of their outer skin, or left as they are, constituting in this way the two primary divisions of ginger into *coated* and *uncoated*; in addition to which, it is sometimes imported from Jamaica in a *green* state, preserved in jars with syrup. The two first divisions are sold either in the state in which they are imported, or finely ground, and sifted with great care.

894. **Ginger** owes its pungency to a volatile oil with an acrid resin, which are contained in it, and mixed up with other vegetable substances, as gum, starch, and woody fibre. Ground ginger contains all the elementary principles of the root.

895. **It is Adulterated** with wheat-flour, sago, potato-flour, cayenne pepper, mustard-husks, and turmeric powder, none of which are prejudicial to health, and the fraud is only on the pocket.

896. **Nutmegs and Mace** are both obtained

from the nutmeg tree, of which there are three species—*Myristica fragrans*, *M. fatua*, and *M. malabarica*. Together, they are the fruit of the tree, which is similar in appearance to a pear tree, and produces a fruit about the size of a peach, but shaped like a pear, and smooth externally. The outer fleshy part of this is the pericarp, and this when ripe separates into two longitudinal sections, within which lies the seed proper, or *nutmeg*, enclosed in two coats, besides the *mace*, which fills up the space between these and the pericarp. The tree, known to botanists as *Myristica fragrans*, is cultivated in the Molucca Islands, as well as in Java, Sumatra, Singapore, Penang, the Island of Bourbon, Bengal, Madagascar, and the West Indies; and these trees produce the *true nutmeg* of commerce, which is round, and of a strong aromatic flavour and smell. A second and inferior kind, called the *wild* or *false nutmeg*, is obtained from the *Myristica fatua* and *M. malabarica*, growing in a wild state; and they may be distinguished from the true nutmeg by being longer and paler than it.

897. Mace is also *true* or *wild*, according as it is obtained from either kind of nutmeg tree. As imported into this country, the true mace is of a golden or orange yellow, transparent and horny. False or wild mace is of a dark red colour, and deficient in flavour and smell.

898. The Nutmeg, as well as the Mace, contain a fixed, and also a volatile oil, as well as starch and woody matter.

899. Adulteration.—It might readily be supposed, that as these spices are not powdered, but are sold as imported, that no adulteration could possibly be practised; and it appears in reality that very little is attempted. The only fraud is found to consist in the abstraction of the volatile oil by distillation, which deprives the nutmeg and mace of their chief flavour and utility as spices. In order to preserve the nutmeg from insects, it is often soaked in lime-water, or covered with powdered lime; but this does not seem to be a fraud, but rather a preservative. It therefore need not be guarded against, but the presence of the full complement of oil should, if possible, be ensured. This can only be done in practice by attending to the flavour and smell, and comparing them with the recognised genuine article. The shape is a good guide to the true nutmeg, and purchasers should always select those of a round form, avoiding those which are like dates in appearance, or even at all elongated beyond a very slight departure from the true circle.

900. Pimento, or Allspice, also called Jamaica pepper, is the berry of a tree bearing the first name, and growing in the West Indies, from which it is imported in bags. There are two qualities of it, but one only is extensively used in this country.

901. Pimento, like most other spices, owes its qualities as a condiment to its essential oil, which is contained in considerable quantities in the berries mixed with gummy and resinous matter, astringent extract and fatty oil. This essential oil is readily obtained by distillation.

902. The Adulteration of this spice is so trifling, as scarcely to require alluding to; and as the price of Pimento at present is from 4½d. to 4¾d. per lb., with a duty of 5s. per cwt., the retailers make a fair profit in selling it at 8d., and need not have recourse to adulteration.

903. Cloves are the flower-buds of the *Caryophillus aromaticus*, which is grown in the Molucca Islands, Sumatra, the Mauritius, Bourbon, Cayenne, Martinique, and St. Vincent. They present a peculiar oblong appearance, too well known to need minute description, with a pungent and aromatic taste, which is highly agreeable to most people. Like the other spices, cloves contain an essential oil, besides resin, tannin and woody fibre. The oil is extracted in considerable quantities, and sold separately for various purposes.

904. Little or no adulteration takes place in this article. The wholesale price is from 4½d. to 1s. 2d. per lb.; and the duty being 2d. per lb., together with the retailer's profit, bring them up to the retail price of 1s. for Bourbon and Cayenne, 1s. 4d. for superior Bourbon, and 2s. for Penang cloves.

905. Cinnamon and Cassia are the bark of two species of *Cinnamonum*; that producing the former bearing the specific name *Zeylanicum*. The cinnamon tree is cultivated chiefly in Ceylon, but sparingly in Bombay, Malabar, and Java. The bark, as sold, is peeled from the three-year-old branches, and dried in the sun; and its quality varies considerably, but its external characters are generally pretty nearly the same. Cassia, or the bark of the *Cinnamonum cassia*, is brought from China, Malabar, Bombay, and the Mauritius; it resembles the true cinnamon in flavour, though less delicate and not so sweet, and attended with a certain degree of bitterness. It is constantly substituted for cinnamon, and it is necessary, therefore, to endeavour to distinguish the one from the other by our ordinary senses if possible.

906. The Bark of Cinnamon is not much thicker than drawing-paper, and breaks with an uneven margin, showing a coarse

arrangement of its fibres. It also consists of several concentric layers of bark, one within the other. These are called *quills*, and are of a pale brown, with a sweet aromatic taste, unaccompanied by any bitterness or astringency.

907. Cassia Bark is considerably thicker and coarser, and has a short fracture and smooth edge. It has generally only one, or at most two quills, within the external one; and the taste is a coarse imitation of cinnamon, with a strong tendency to leave an astringent bitter on the tongue. By these characters the bark of the one when whole may be distinguished from the other; but when powdered, the aid of the microscope is required to detect the imposition, which is extensively practised; and, failing this, the character of the vendor is the only safeguard. Cassia buds are also imported.

908. The Wholesale Price of Cinnamon ranges from 1s. to 2s. 8d. per lb., with a duty of 2d. per lb. Cassia lignea is imported at prices varying from £5 10s. to £6 per cwt., with an addition of 9s. 4d. per cwt. for duty. With this slight difference in the price it must occasion surprise, that the cheaper article should be substituted for one which can be bought for the same money in its inferior qualities.

909. Mixed Spice, as implied by the name, is a compound of the various ordinary spices, as, ginger, pimento, cassia, &c. It is largely adulterated, and cannot therefore be recommended, nor is its use at all required, inasmuch as the cook may in all cases use her own judgment to greater advantage.

910. The following table exhibits the wholesale and retail prices of the spices generally kept by the housekeeper:—

Wholesale and Retail Price of Spices.

	Wholesale Price.							Retail Price.					
	£	s.	d.		£	s.	d.	s.	d.		s.	d.	
Cinnamon, 1st quality ... (duty 2d.) per lb.	0	1	10	to	0	2	7	4	0	to	4	8	per lb.
" 2nd " ... " "	0	1	4	"	0	1	9						
" 3rd & 4th " ... " "	0	1	0	"	0	1	8						
Cassia lignea ... (duty 9s. 4d.) per cwt.	5	10	0	"	5	18	0	1	6	"	2	0	"
Cassia buds ... ... " "	7	10	0	"	8	0	0						
Cloves, Amboyna .... (duty 2d.) per lb.	0	0	7½	"	0	0	0	1	4	"	2	0	"
" Bencoolen or Penang " "	0	1	0	"	0	1	2						
" Bourbon and Cayenne " "	0	0	4½	"	0	0	4½						
Mace ... ... (duty 1s.) per lb.	0	1	6	"	0	2	4	4	4	"	5	4	"
Nutmegs, 1st quality ... " "	0	3	1	"	0	4	6	4	4	"	5	4	"
" 2nd " ... " "	0	2	2	"	0	2	8						
" 3rd " ... " "	0	2	0	"	0	2	1						
Pepper, Penang (duty 6d. & 5 per cent.) per lb.	0	0	4½	"	0	0	5¼	1	2	"	1	4	"
" Malabar " " "	0	0	5¼	"	0	0	5¾						
" Sumatra " " "	0	0	5¼	"	0	0	5½						
" White " " "	0	0	7½	"	0	0	8	1	6	"	1	8	"
Pimento, Jamaica (duty 5s. per cwt.) per lb.	0	0	4½	"	0	0	4½	0	7	"	0	8	"
Ginger, Jamaica ... ...(duty 5s.) per cwt.	2	5	0	"	6	18	0	0	8	"	2	4	"
" " fine large " "	7	10	0	"	10	0	0						
" East India Cochin " "	1	16	0	"	5	15	0						
" African ... ... " "	1	6	0	"	1	6	6						
Mustard	—				—			0	6	"	1	6	"
Mixed spice	—				—			2	0	"	2	4	"
Long pepper	—				—			1	4	"	1	6	"
Cayenne pepper	—				—			2	0	"	2	6	"

Sub-sect. D.—Miscellaneous Groceries.

911. These consist of *rice* (which is also often sold by the corn-chandler), *arrow-root*, *sago*, *tapioca*, *semolina*, *maccaroni*, *vermicelli*, and various farinaceous foods, as, *tous-le-mois*, *soujee*, &c.

912. Rice contains a large proportion of starch and gummy matters, but very little of the nitrogenized compounds and oily matter, as compared with the cereal products which have already been examined. It is, therefore, only for certain purposes that this grain is useful—as, for instance, to produce fat; and as it has a tendency to constipate the bowels, it is much employed when there is a predisposition to diarrhœa. As obtained by mere thrashing and dressing the grain from the straw, rice is covered with a thin husk, and is then known as *paddy* in the rice-growing countries. It is here always deprived of this husk, though often imported in it, and in this state it forms that well-known article, *rice*, which is ordinarily distinguished as *Carolina rice* when of the best quality imported from America, and *Patna* when the produce of the East Indies. These grains are ground, and then known as *rice-flour*, or *ground-rice*, which is only used for making puddings. For even

if rice is adopted as a cheap addition to flour for making bread, it is boiled *whole*, and not in a ground state.

913. THE WHOLESALE PRICE OF RICE, per cwt., is at present as follows:—

	s.	d.		s.	d.
Carolina, London dressed	46	0	to	0	0
Patna	12	6	,,	18	0
Bengal white	9	0	,,	12	6
Arracan	8	0	,,	9	6
Madras	9	0	,,	9	0
Java	12	0	,,	16	0

By retail, rice is sold at prices varying from 1½d. to 4½d. per lb., and ground-rice at about 3d. to 6d. per lb.

914. ARROWROOT is a species of starch, obtained from the roots of several plants; that from the *Maranta arundinacea* is considered the best, and is generally sold as Maranta or West India arrowroot, or sometimes as Bermuda or Jamaica arrowroot. The arrowroot obtained from *Tacca oceanica*, and from the *Manihot* and *Curcuma*, as well as the produce of our own potato, are vastly inferior to the real *Maranta*, by which name the arrowroot from that plant ought to be designated, for the sake of distinction.

915. MARANTA ARROWROOT is almost entirely composed of starch-granules. To the eye it should be of a dull flake-white, crackling under the pressure of the finger; *and when double its weight of concentrated hydrochloric acid is poured upon it, it should become an opaque paste.* By the addition of a pint of boiling water to a table-spoonful of arrowroot previously mixed with a little cold water, it makes a transparent jelly, which becomes thinner in the course of twenty-four hours, the good quality of the arrowroot being indicated by the time which it occupies in getting thin. Potato arrowroot, as well as some other inferior kinds, when mixed with a similar quantity of hydrochloric acid to that mentioned above, form a *clear* and *transparent* paste, by which they may be distinguished from the Maranta.

916. MARANTA ARROWROOT is adulterated by mixing with it, or substituting for it, the inferior kinds, or sago-meal, which, being exceedingly cheap, is very commonly made use of for the purpose, either alone or mixed with potato-starch. The microscope affords the best means of detecting these substitutions, but the test with hydrochloric acid (mentioned in last par.) is a very serviceable one for ordinary purposes.

917. THE WHOLESALE PRICE OF MARANTA ARROWROOT varies from 5½d. to 1s. 4d. per lb. That from Bermuda fetches the highest price. African arrowroot is now sold as low as 4½d. per lb., wholesale. The duty is only 4½d. per cwt. By retail, good and genuine Maranta arrowroot is sold as low as 1s. per lb.; but the best qualities fetch 2s. 6d. per lb.

918. SAGO, like arrowroot, is a kind of starch, the produce of the *Sagus farinifera*, an Indian palm, of which it is the pith—washed, to deprive it of its cellular tissue. In order to convert the paste resulting from its admixture with water into the round granules in which it is imported into this country, the pulpy matter, when half dry, is forced through a perforated plate and then rubbed into little balls. Its low price prevents any great fraud in substituting any other farina for it.

919. THE RETAIL PRICE of the finest pearl sago is from 3d. to 3½d. per lb.

920. TAPIOCA is the pith of the *Manihot* tree, washed, as in the case of sago, and converted by art into masses of a larger size, and more irregular shape. It is imported from Brazil and the East Indies, and is exceedingly nutritious and agreeable to the palate when flavoured by the addition of milk, spices, fruits, &c. It is very wholesome at all periods of life, and though quite as nourishing, yet it does not cause flatulence or constipation like rice. It is adulterated to some extent with sago, potato-starch, &c., which can scarcely be detected, except by the microscope.

921. THE RETAIL PRICE OF TAPIOCA is from 8d. to 10d. per lb.

922. SEMOLINA, as now sold, is a preparation from wheat-flour, by removing part of the starch, as is the case also with SEMOLA, which is very similar in its composition to semolina. Both are chiefly composed of the gluten of wheat, mixed with a small quantity of starch, and converted by art into small round grains resembling sago; yet it is more angular in the shape of its granules than that well-known article. Both are very nourishing and less constipating than ordinary wheat-flour.

923. THE PRICE OF SEMOLINA, by retail, is from 5d. to 7d. per lb.

924. MACCARONI AND VERMICELLI are but fine wheat-flour mixed with water, and forced through openings of a certain size to produce the two varieties. The former is about the size of a large goose or swan-quill, while the latter is somewhat less than that of the crow. There is a considerable difference in the quality of the article, depending chiefly upon that of the flour of which it is made; and it is supposed that Italian wheat is particularly adapted for the purpose; and hence maccaroni and vermicelli from Italy are considered very superior to any English manufacture, though I believe considerable quantities are really made in this country.

925. The Price of these articles by retail is about 9d. per lb., in boxes of 5 lb. each as imported.

926. Of the Farinaceous Foods sold for infants, Hard's is the most generally known; but all are composed of wheat-flour, more or less pure, and *baked*, or mixed with bean or potato-flour, which is no improvement. The price is generally three or four times that of the finest and most genuine flour, and therefore, as baking generally costs a mere trifle, the public are imposed upon to an enormous extent, and may readily furnish themselves with an equally good article at one-third the cost.

927. Tous-les-Mois is only another kind of farinaceous food, consisting generally of wheat-flour mixed with inferior arrowroot. It is said to be prepared from the pith of the *Canica coccinea*. It is now sold at about 4d. per lb.

928. Isinglass is procured from various parts of various fish; but the true kind is made from the swimming-bladder of the sturgeon. Spurious isinglass is obtained from the intestines of the cod, and called ribbon isinglass.

929. Isinglass consists of gelatine, more or less pure according to the quality. It is imported from Russia, Brazil, and the East and West Indies. The first of these is far the best in quality, whilst that from Brazil is very impure, and fit only for the brewer or refiner. Isinglass is imported in the forms known as *best*, *seconds*, and *thirds leaf-isinglass; purse isinglass, long and short staple isinglass*, which all require solution and clearing, as well as further preparation for the market, when intended for culinary purposes. The leaf-isinglass is chiefly obtained from the beluga (*Accipenser huso*), and is that from which the best isinglass is prepared. Each leaf is generally about ten or twelve ounces in weight, and is submitted to the action of rollers worked by steam, which spread it out into a thin ribbon, and it is then cut by a rapidly-revolving cutting-machine into the fine shreds in which state it is sold. When dry it is semi-transparent, but on contact with water it soon becomes opaque and swells, and dissolves slowly in it, leaving a very slight residuum of cellular membrane, so thin as not to be perceptible without a very careful examination. Russian isinglass makes a transparent jelly when cold, but that from Brazilian isinglass is somewhat milky.

930. The Adulteration of Isinglass is chiefly by substituting the inferior qualities for the superior; or, again, gelatine for the common kinds of isinglass. To understand this the following article must be examined.

931. Gelatine is extracted from the bones and hoofs of the ox and sheep, as well as in some cases the horse, by boiling them in water at a high temperature obtained by pressure. Refuse-skins, leather-cuttings, and cod-sounds are also used for the same purpose; in fact, anything containing gelatine, which at any particular time can be purchased at a low rate. These make a jelly more or less pure, which is strained and bleached, and then dried in thin *laminæ*, and cut into shreds by a machine. These shreds, however, are not quite so fine as those of isinglass, inasmuch as the gelatine having no cellular membrane to hold it together, and its molecules also being of a coarser size, will not cohere sufficiently to allow of the same degree of subdivision as isinglass.

932. To distinguish the one from the other, Dr. Hassall gives the following directions, which are sufficient, I believe, for the ordinary observer, to preserve himself from the effects of fraud upon his pocket:—

"The Shreds of Isinglass when immersed in cold water become white, opaque, soft, and swollen. The swelling is equal in all directions, so that when viewed with a low power of the microscope (an ordinary lens) they appear more or less quadrangular. In boiling water they dissolve nearly without residue. The smell of the dissolved isinglass, when hot, is somewhat fishy, but not unpleasant. The moistened shreds, or the solution, exhibit to test-paper a neutral, or faintly alkaline, and rarely a slightly acid, re-action. In acetic acid they swell up, and become soft and jelly-like, the greater part of the structure being lost. Lastly, according to Dr. Letheby, 'the ash which results from the incineration of good Russian isinglass is of a deep red colour; it contains but a small portion of carbonate of lime, and never amounts to more than nine per cent. of the isinglass used.'

933. "The Shreds of Gelatine, on the contrary, when placed in cold water, swell up, acquire increased transparency, and become translucent and glass-like. The form which they take in swelling is peculiar; they do not, like those of isinglass, swell equally, and remain quadrilateral, but become expanded, flat, and ribbon-like, the broad surfaces corresponding to the incised margins. The dry threads on the uncut surfaces frequently present a peculiar shining lustre, not unlike that of tinsel. In boiling water the shreds do not entirely dissolve, but in most cases a copious deposit falls to the bottom of the glass. The smell of the hot infusion is like that of glue, and therefore disagreeable. The moistened filaments or the solution of gelatine usually exhibit a strong acid re-action; this, in some cases, is due to the substances used in

in this country, as well as in Ireland, and to some extent in Scotland. The culture of the potato, and its varieties, will be found under the head of Gardening, and it is only necessary here to consider it under the three kinds in which it comes to market, namely, as, *forced*, *new* or *early*, and *old* or *late potatoes*.

949. STARCH is the substance which forms the largest part of the solid materials composing the potato, being, on the average, 15 or 16 per cent.; while the remaining albumen, mucilage, and woody matter, together, only compose about 12 per cent. Of the raw potato, therefore, rather more than one quarter only is solid nutritive matter, whilst the whole of the remainder is water, and consequently perfectly useless in the shape of food. Thus, while bread consists of water to the extent of one-fourth or one-fifth of its weight (see paragraph 843), the raw potato, which is often substituted for it, has nearly three-fourths of its weight of water; and is, besides, almost entirely deficient in nitrogenized principles, so that it requires an extra supply of animal food, to be mixed with it, to that which will make oatmeal or wheaten-flour fit for the support of man.

950. FORCED POTATOES are raised in hot-beds, under glass, and sold at such prices as to bring them above the reach of economical people, and as the quality is not good, but always more or less watery, there is no reason whatever for their introduction to the table, except their scarcity and consequent high price.

951. EARLY OR NEW POTATOES are those which first develop their tubers in the open air. They are more or less watery or waxy, as compared with the ripe potato, and are not very digestible to a delicate stomach, but to a strong one they form an agreeable variety, and they are sufficiently easy of solution to make them available without injury. As they are dug up before they are ripe, they do not keep many days, but they are better for being exposed for twenty-four hours. Many of them are imported from Holland and Belgium, but even these reach the London market within twenty-four or thirty hours of their being dug, and they are consequently in a good state of preservation. When first brought to market they sell for six times the price of the old potato; but by the end of June, they may generally be obtained for little, if any, more than the current rate of the produce of the last year.

952. THE OLD OR LATE POTATO is the mature tuber, which is dug up after the stalks are dead, and stored for winter use. In consequence of the prevalence of the disease which has destroyed so many potatoes of late years, there is always a great doubt about this crop, and however abundant they may be in the autumn, it does not always follow that the supply will last through the winter. It is chiefly for this reason that it is very doubtful whether in the long run it is better to lay in a winter's stock of potatoes, when there is an opportunity for this, or to buy them "from hand to mouth." In all cases, whether in London or elsewhere, they are worth considerably less in the autumn than in the winter and spring; and for a very good reason, because a certain number always decay; and, in addition, because of the trouble and expense of storing them. Potatoes, when exposed to light and moisture, or to the latter only, throw out fibrous roots, and also leaf-stalks, and consequently lose substance and weight. Hence, it is necessary to exclude these agents by burying the potatoes underground, and protecting them from moisture by thatching, or otherwise covering in the heap, or else to deposit them in barrels in a dark and dry cellar, and cover them with perfectly dry sand. But, with every precaution, the potato will shoot out its radicles soon after Christmas; and it is seldom that more than two-thirds of the weight of potatoes buried in the autumn can be produced fit for the market in the spring. Very often one-third of sound potatoes is the residue, and in some cases where the disease is rife none are left, and the holder has nothing to pay for the trouble and expense incurred throughout the cultivation and storing of his stock, which he fancied worth a considerable sum. Besides these reasons for avoiding a winter's store, there is also the consideration, that when there is a large stock there is little or no check upon consumption. If the cook is obliged to come to her mistress for a weekly supply, the latter knows what is used, and can stop any extravagance as soon as it takes place; but on the other plan, she does not very often find out until too late that her servants have been using her potatoes at such a rate as to bring the stock to an end in February or March which she expected ought to have lasted till June. On the whole, therefore, where potatoes are bought, and unless a very careful supervision is exercised, I believe it to be more economical to buy them weekly than to lay in a supply for the winter; though at the same time, in those years when they keep well, and with good opportunities for storing them, I am quite aware that they may often be obtained, including all expenses of storing and waste, at little more than half the price by retail. But taking the average loss by disease and

other causes, I think the balance is in favour of the method here advocated.

953. CABBAGES, CAULIFLOWERS, AND BROCOLI come next to potatoes in point of general utility, the quantity consumed being enormous. From the large proportion of nitrogen which they contain, they are very useful in building up the muscular system, and they are therefore well fitted for those who take active exercise; but for delicate stomachs they are too strong, and produce flatulence and indigestion. The flowery parts of the cauliflower and brocoli are an exception to this rule, and they may generally be eaten with impunity by all but confirmed dyspeptics; but even in them the stalk is full of nitrogenized matter, and very liable to produce indigestion. *Summer cabbage* is very nourishing, and when well-boiled tolerably digestible; it is a close-hearted cabbage, but it does not run to any great size. *Red cabbage* is grown for pickling only. *Savoy cabbage* is also close-hearted, but its leaves are very wrinkled, so that they do not lie upon each other like the ordinary sorts. They are in season all the winter, but are not considered tender till after the first frost. *Brussels sprouts* are the small secondary buds from a species of savoy, which are thrown out after the first heads have been cut, and they are largely used and highly prized by most classes in London, where they form a standing vegetable during the latter part of winter and the early spring. The *cauliflower* and *brocoli* are much alike, the chief difference to a casual observer being in the season during which each is prevalent. Some few cauliflowers come to a head in June, but the bulk of them do not reach perfection until July and August, and by September they become scarce. Brocoli, on the other hand, come into season after cauliflowers are at an end, and last throughout the winter, so that one or the other may be had from June till March. The *cow-cabbage* is now grown for the use of the poor of London, being in good condition throughout the winter, and sold at a very low price. It is, however, very rank in flavour, and only calculated for the strongest stomach, though full of nourishment. The *Scotch kales* and other kales, or curly greens, are in season during the winter, and serve to make a variety for those who are fond of green vegetables. *Spinach* is used in the same way as greens, and is an excellent variety of this sort of vegetable, being in season during the spring and early winter.

954. ARTICHOKES, ASPARAGUS, AND SEA-KALE form a group of delicacies which are only served to those who can afford to pay tolerably high prices for their vegetables. They are all very nourishing and digestible. *Artichokes* are of two kinds, separated from each other in the vegetable kingdom: one of them, the Jerusalem artichoke, resembles the sunflower and dahlia in its growth above ground, and produces tubers like the potato beneath the earth, which form the part used in cooking. They are sweet, nourishing, and mild, but the flavour is not universally admired. The *true artichoke*, the *asparagus*, and the *sea-kale* are eaten as delicacies; the two latter being considered peculiarly fitted for invalids. Sea-kale is always bleached under pots, and being an early vegetable, is prized on that account. Asparagus makes its appearance in the spring, and is generally cut as soon as it shows its head, which is a great mistake, as the bleached part is always hard and stringy, while the green head is tender and full of flavour. It is, therefore, becoming more the custom to wait till the head is well above ground before cutting it, and then not to carry the knife far beneath the earth, whereby also damage is often done to other shoots.

955. RHUBARB is cultivated largely, in a similar way to sea-kale, and forced in early spring under pots, for the sake of affording a material for puddings and tarts. It may, therefore, be considered rather as a fruit than a vegetable, which, however it really is. The large giant-rhubarb is now a good deal out of favour, its place being supplied by a smaller pink variety, which is full of rich juice, and makes better tarts, &c., than its gigantic rival.

956. CARROTS, PARSNIPS, AND TURNIPS are all roots of a somewhat similar character, though differing in form and colour. The two first are stored for use during the winter, and are much valued as vegetables; as also is the last, but the variety of it suited to the table will not keep long out of the ground, and it is therefore not to be obtained from the time that the frost sets in until May, when the young turnips first come in. *Turnip-tops* also form a valuable green dish, when gathered at the proper age, and in the early spring. Those grown later than May are strong and scarcely fit for food. *Beet-root* is grown in England for human food, but it is eaten cold, more as a salad than as a vegetable.

957. ONIONS may be considered as a seasoning, rather than as a vegetable, though sometimes stewed alone. They are grown to a great extent in this country, and also imported from abroad as *Portugal onions*, large and free from strong flavour, and well calculated for stewing. *Young onions* are drawn for flavouring salads in the spring. The *leek* is closely allied to the onion, but has a small bulb, and is chiefly used for Irish stews, and by the Welsh in place of onions

generally. *Garlic*, *chives*, and *shalots* are not extensively used in English cookery; but small quantities are sometimes introduced into made-dishes.

958. **Peas, Beans, and Vegetable Marrow** are seeds which are boiled in a green state, and used as vegetables, some without their pods, as the pea and broad-bean, and others with them, as the French bean and vegetable marrow. They are all very nourishing, and some very digestible, as the marrow and French bean; but broad-beans are very strong food, and so are peas, except when young. French beans, also, ought to be used when young, and are hard and stringy at a later period. There is a great difference in the sorts of peas sold in the market, some of them being only the common field-pea, devoid of fine flavour, hard and indigestible. Others grown in the garden, of good sorts, are full of rich meal and fine flavour, soft, and easily digested. The purchaser will therefore take care to deal with those only who will supply a pea of a good sort, and at the proper age. The white French beans dried, called *haricots*, are used largely abroad, boiled and served as a vegetable; but they are not much liked in this country. Peas are, however, extensively used in a dry state for pea-soup and peas-pudding.

Sub-sect. B.—Salads.

959. **Lettuce** forms the chief component part of the salads of this country throughout the spring and summer. There is a great variety of lettuces now grown; but the two chief groups are the cabbage and the cos-lettuce, the former coming into season in the early spring, the latter during the summer. The district round London is celebrated for its lettuces, and some are of a great size, and with a beautiful white heart and fine flavour. There is a considerable amount of anodyne power in them, which is sometimes useful when taken at night by bad sleepers. The lettuce is one of our most digestible salads, and very wholesome to those who are much confined to meat and bread, for whom it forms a useful change.

960. **The Endive** is a winter plant, and therefore of use as a salad at that time, but not equal in flavour to the lettuce. It requires bleaching, by covering up with an earthen pot, or storing it in a dark cellar, before it is fit for eating, as in the unbleached state it is highly bitter to the taste.

961. **Radishes** are roots growing in two forms—the long and the turnip-radish, much resembling the carrot and turnip in their form and composition; but containing a sharp and pungent fluid which renders them well fitted to stimulate the stomach to digest other food, and they are therefore used largely as an addition to it. They are wholesome to most people, though much too strong and indigestible for a weak stomach. *Horseradish* is a different plant altogether, and only used to be eaten with roast-beef and some other kinds of rich food. *Celery* is extensively eaten as a winter-salad in this country, and in the absence of lettuce is valuable as the most easily procured of all those which will bear our winters. It is also stewed and eaten as a vegetable. *Cucumbers* are forced in hot-beds for those who can afford the price at which they are sold in the early season, but towards the end of the summer large quantities are brought to market which are grown in the open air and sold at a very cheap rate. They are, however, rather an indigestible food to most people, especially when eaten in large quantities as a corrective for rich diet, as salmon, lamb, &c.

962. **Watercress and Mustard-and-Cress** are especially wholesome when young and tender; but the first of them is sometimes very old and tough before it is brought to market. Enormous quantities are grown near London, in beds supplied with water for the purpose, and richly furnished with decaying animal and vegetable matter fit for its nourishment. Cresses are all highly antiscorbutic, and though not very nourishing, yet they freshen the stomach, and in that way do great good to the whole system. Their use should be encouraged, particularly for children brought up in towns.

Sub-sect. C.—Herbs for Seasoning.

963. The vegetables composing this group are not eaten as a dish by themselves, but form parts of other dishes, in the shape of what is called seasoning, aided by some of those already alluded to, as onions, shalots, &c. It will only be necessary here to enumerate them as consisting of *parsley*, used also as a garnish; *fennel*, only for adding flavour to mackerel; *mint*, *sage*, and *thyme*; *marjoram*, sweet and knotted, and *basil;* also *capers*, *nasturtium*, *capsicums*, and *tomatoes*, which are grown to be used as a means of flavouring sauces when preserved in vinegar; and therefore to be considered rather as pickles than as herbs.

Sub-sect. D.—Vegetables Found in a Wild State.

964. **Mushrooms** are the most generally used of those few English vegetables which are met with in a wild state, and as there are several poisonous fungi very similar to them, it is important to ascertain the peculiarities by which they may be known. All the **Fungi** are very different in their

modes of growth from the ordinary classes of vegetable substances, and also very much among themselves in size, form, colour, and consistence. Of these many are commonly called mushrooms, but the true edible mushroom (*Agaricus campestris*, LINN.) has distinctive features, which will presently be described. Fungi, in general, have a form more or less resembling a parasol, some are globular, others membranaceous, tuberous, or froth-like. They are found of all colours, except green, but the prevailing hue is grayish white, or yellowish pink. Their consistence is fleshy, spongy, gelatinous, cork-like, or woody, but never herbaceous. They have neither leaves nor flowers, and in their anatomical structure they consist entirely of cells, either of a rounded or oblong shape. When arrived at maturity, they all present minute coloured globules, which are their buds, or reproductive organs, analogous to the seeds of other vegetables. These globules are found internally—as in the truffle and puff-ball, or covering the entire surface, or in laminæ on the under surface—as in the mushroom, or at the openings of tubes in furrows or capsules, or sometimes floating in mucilaginous matter. Between two and three thousand fungi are now described, grouped into nearly one hundred genera. Almost all fungi are rapid in their development, and in this respect exceed other vegetable substances. They delight in moist shady places, and grow on animal and vegetable bodies in a state of decomposition, some even being developed within the substance of living vegetables. All have a peculiar odour, by which they may be recognised, and their taste is generally insipid, but sometimes acrid, styptic, or caustic; or, again, as in the edible mushrooms, very agreeable to the palate. Many species have long been used for food in China, India, and Africa, and more recently on the continent of Europe, particularly in Italy, where they are consumed in very large quantities, and cultivated to an enormous extent, one layer succeeding another so as to afford a constant supply. Many fungi are exceedingly poisonous, producing nausea, vomiting, giddiness, convulsions, and sometimes death itself. If, therefore, it is suspected, from these symptoms, that a mistake has been made, it is better in all cases to give an emetic without loss of time, and thus eject the contents of the stomach. THE COMMON MUSHROOM (*Agaricus campestris*) is found in rich open pastures, especially in those where horses have grazed in the previous year. It is distinguished from the poisonous kinds by having an upper smooth surface, whose cuticular covering readily peels off, leaving a fibrous substance beneath. This upper surface is white in the young mushroom, and more or less brownish in the full grown one. The under part is a radiating series of laminæ, which are pink in the young mushroom, and become light-brown, and afterwards dark-brown, as the mushroom becomes full-grown. The whole is supported upon a short and thick foot-stalk, varying in length from a quarter of an inch to two inches, or rather more. In shape the mushroom commences with a resemblance to a nodule of baker's dough, nearly round and smooth. This gradually expands below like the opening of a parasol, but more round and doughy, until it has spread out into the shape and size of a plate, frequently being eight or nine inches in diameter. This species is cultivated in our gardens by the use of what is called *mushroom spawn*, which is nothing more than rotten dung, and other similar matters compounded together, and kept for a year, until it has had time to develop the fungoid globules, when it is planted in hot-beds, and in process of time the mushrooms make their appearance. They are, however, inferior in flavour to the wild sorts, and the only advantage in using the spawn consists in the early appearance of the mushrooms, and the avoidance of danger in the gathering of false fungi by mistake for the true ones. The large full-grown mushroom is used for making ketchup, the middle size for stewing or broiling, and the small ones, called "buttons," for pickling.

965. THE CHAMPIGNON (*Agaricus pratensis*, LINN.) is very similar to the common mushroom of small size, in all respects except in the colour of the *laminæ*, which are cream-coloured instead of pink. They are, however, so very liable to be mistaken for the poisonous kinds of fungi popularly known as *toad-stools*, that they are seldom ventured upon in this country. They grow wild in dry upland pastures, especially in parks.

966. THE TRUFFLE (*Tuber cibarium*), is remarkable for its peculiar mode of growth underground, at the distance of a few inches from the surface. When arrived at maturity it becomes gelatinous, and gradually dissolves away. There are several species, of which the common truffle only is eaten in this country, and is said to be found in some few situations in England, though not to any extent, those which are eaten being imported from abroad. In certain districts of the continent of Europe it is astonishingly abundant, as in Piedmont, and at Perigord in France, which latter place has acquired a great celebrity for producing them. They abound most in light and dry soils, especially in oak and chestnut-forests; but it

would be difficult to procure them any where, if it were not that hogs are extremely fond of them, and lead to their discovery by rooting in the ground. Dogs also are taught to find them by the scent, and indicate their existence by scratching the ground, or, if allowed to do so, will actually dig them up. The season for collecting them lasts from October to January. The truffle is about the size of a hen's egg, entirely destitute of roots or fibrils; the skin blackish or gray, studded with small pyramidal warts; the flesh white gray, or blackish, varied with black or brown veins. They are dressed in various ways; but are rather difficult of digestion, and should therefore be indulged in with moderation.

967. THE MOREL (*Phillus esculentus*) is another species of fungus, found in the fields and woods in the spring and early summer. It is of an egg-shape, hollow, and raised on a foot-stalk. The colour is yellowish-brown; but, like the champignon, they are so liable to be mistaken for poisonous fungi, that it is dangerous to indulge in them without great care in their selection.

968. THE CHEMICAL COMPONENTS of all the fungi are nearly the same, being remarkable for the amount of nitrogen which they contain. From this circumstance they are very valuable to the poor who are deficient in meat, milk, and other nitrogenized compounds.

969. MUSHROOMS AND TRUFFLES may be bought at the greengrocers, the former at a tolerably low rate, and the latter only at a price which places them out of the reach of the rigid economist. In the provinces mushrooms may generally be bought in the market, or from those who make it a business to gather them.

970. SEVERAL MARINE VEGETABLE SUBSTANCES are eaten in particular localities, but more as popular medicines than as articles of food. It is unnecessary, therefore, to allude to them further than by name—as, *sweet tangle*, *laver*, *badderlocks*, and *carragheen* or *pearl moss*, which last is confined to Ireland, and extensively used there in consumptive cases among the poorer classes.

971. THE COMMON NETTLE, which is universally met with, is really a very valuable kind of food when gathered at the proper age and boiled. In March and April they are young and tender, and should be cut before they show any flowers, as after this they are strong in flavour and stringy in texture. When boiled like spinach, or added to soup, they are a very agreeable addition to the ordinary fare, and far better than the inferior qualities of cabbage.

972. THE DANDELION is used in France to a great extent as a salad, for which purpose its young leaves are cut and mixed with other plants, as sorrel, &c., and there is no doubt that they form a good alterative.

973. THE SORREL grows wild in all our meadows, but is almost wholly neglected in this country, being in fact a somewhat different plant to that which is so much prized in France. It is, however, equally useful as an antiscorbutic.

SUB-SECT. E.—SEASONAL TABLE FOR VEGETABLES.

974. THE FOLLOWING TABLE OF SEASONS in which the commoner vegetables are generally to be met with in the shops of the greengrocer, will serve as a guide to the young housekeeper.

Vegetables.	When in season.
Artichokes, true	July to October.
Artichokes, Jerusalem	Winter and spring.
Asparagus	February to June.
Beans, broad	June to August.
Beans, French	June to August.
Beans, scarlet runners	July to September.
Beet, red	All the year stored.
Broccoli	November to April.
Cabbage, summer ...	June to August.
Cabbage, winter ...	October and Nov.
Cabbage, red	July to September.
Kale, Scotch	December to Feb.
Kale, sea	January to March.
Carrots	May to March.
Cauliflowers	June to September.
Celery	October to Feb.
Cucumbers, forced ...	March to June.
Cucumbers, open air	July to September.
Endive	September to Dec.
Leeks	Autumnal months.
Lettuce	April to October.
Mushrooms	Spring & Autumn.
Mustard and Cress ...	Ditto.
Onions, young	May and June.
Onions, stored	August to October.
Parsnips	November to April.
Peas	June to Sept.
Potatoes, forced	March to May.
Potatoes, young ...	June and July.
Potatoes, for storing	August to October.
Radishes, long	April and May.
Radishes, turnip ...	June and July.
Spinach, spring	April to June.
Spinach, winter	November and Dec.
Tomatoes	August and Sept.
Turnips	May to July.
Turnip-tops	April and May.
Vegetable marrow ...	August and Sept.
Watercress	May to July.

SECT. 12.—FRESH FRUITS.

975. THE FRUITERER is the tradesman who keeps for sale all kinds of fruits, in their several seasons; and as these are most of

them exceedingly liable to decomposition, he runs great risk of loss from over-stocking his shop. As, however, little capital is required for the retail-trade, it is adopted by many on that account who have a small command of the needful article, and hence these shops are so common in most towns of any size. Fruits may be practically divided, for marketing purposes, into—1st, *those which are grown in the open air in Great Britain*; 2nd, *hot-house fruits*; and 3rd, *imported fruits*.

Sub-sect. A.—Fruits Grown in the Open Air.

976. To this class belong all the well-known tribe of *currants*, *gooseberries*, *raspberries*, *cranberries*, *barberries*, *mulberries*, *strawberries*, *grapes*, *plums*, *cherries*, *apricots*, *nectarines*, *peaches*, *apples*, *pears*, *quinces* and *medlars*; *walnuts*, *chestnuts*, *filberts*, and *hazel-nuts*. The British wild fruits, consisting of the *blackberry*, *whortleberry*, and *elderberry*, are seldom to be met with in the shops.

977. The Large Group of Fruits which are now naturalized in this country, and which all have the distinctive name of berries, are exceedingly wholesome in moderate quantities, and when used as alteratives rather than as regular articles of diet. In the grape, gooseberry, currant, elderberry, whortleberry, and cranberry, the seed is contained within a pouch, or skin, suspended in a mucilaginous fluid, and this skin, being thick, is always very indigestible, and should not be swallowed when it is of sufficient size to be excluded, as in the case of the grape and gooseberry. On the other hand, strawberries, raspberries, and mulberries have a fleshy interior, with a mammillated exterior, on which the seeds are placed. They all contain a mixture of vegetable acids, with more or less saccharine matter and mucilage, and they are useful as affording a slightly laxative and cooling food, which removes the ill effects consequent upon a too liberal use of nitrogenized compounds, as is too often practised in this country, where butcher's meat and wheaten bread form the staple of our ordinary diet. The gooseberry is eaten in puddings and tarts in an unripe state, in which there is no development of sugar; but the acid contained in it is very wholesome, and there can be no doubt that it is a very desirable article of food, when properly mixed or alternated with other materials. When eaten raw the proportion of acid is too great for the stomach, and the consequence is that spasms, with other forms of disturbance of the digestive organs, make their appearance. In all cases green gooseberries ought to be boiled or baked and mixed largely with sugar before they are fit for food. Raspberries, strawberries, and mulberries are sweet enough when ripe; but barberries and cranberries require a liberal use of sugar to take off their excessive degree of acidity.

978. The Stone-fruits are almost all of them unwholesome when eaten in any quantity, arising from the firmness of the substance of which they are composed. Plums are notoriously prone to produce diarrhœa, though there can be no doubt that this complaint is particularly prevalent at the plum-season, and therefore the concurrence of the two may be accidental, and the one not caused by the other. Peaches are wholesome enough, partly because they are seldom eaten in sufficient quantities to cause disturbance of the digestive organs. With regard to nectarines, they hold an intermediate place in point of wholesomeness; and apricots, when ripe, may perhaps be classed with them. In their green state they are made into tarts, and are tolerably digestible, but are not so much so as gooseberries or rhubarb. Cherries are certainly quite as indigestible as plums, and being chiefly eaten in their raw state, and often when quite unripe, they are on that account doubly dangerous.

979. Apples, Pears, Quinces, and Medlars are the most wholesome fruits we have; the two first being generally cultivated, and brought to market in large quantities. They are met with in great variety, some of each sort being intended solely for the table, others for cider and perry, and a third kind for boiling, baking, and stewing. Quinces are only used for improving the flavour of apples in tarts and for making marmalade, as in their raw state they are not admired.

980. Nuts of all kinds are much relished by all classes, but they require the stomach of an ostrich or a pig to digest them, and should never be eaten in large quantities. I certainly have known a peck of filberts eaten with impunity at a sitting, but this is an exceptional case, and no one should presume to imitate such a bad example. Chestnuts, when roasted, become flowery, and are then perhaps wholesome enough; but all raw nuts are solid and full of oil, so as to defy the delicate stomach to soften and digest them.

981. Almost all the above-mentioned fruits are supplied to the fruiterers by the market-gardeners and others throughout England. Apples and pears are chiefly grown in the western apple district, comprising Devonshire and western parts of Somersetshire and Dorsetshire, and in the midland apple-growing district, including Hereford-

shire, Worcestershire, and a small section of Shropshire. In these two extensive tracts orchards are to be seen in all directions, and the growth of apples in a good season, or a "hit," as it is called, is of incalculable advantage to all classes, from the poor cottager who has only a few trees to the owner of acres of land bearing this kind of fruit. Pears are chiefly grown in the midland district, especially those producing perry.

982. In Selecting her fruit, the manager has chiefly to ascertain that it is in a proper condition as to ripeness and freshness, and that it is of a suitable sort. Thus, certain apples are excellent for boiling or baking, but quite unfit for the table, while others are exactly the reverse. If, therefore, she is ignorant of the various kinds, she had better rely upon her fruiterer, who will be sure to supply her with what she wants if she place the selection in his hands. With regard to gooseberries, there is also great room for choice, any of them serving for bottling or puddings in a green state, but the small hairy sort being those which are best suited to preserving. For the table, this fruit ought to be large and well-flavoured, to please the eye as well as the palate; none are better in this last respect than the old-fashioned red hairy gooseberry.

Sub-sect. B.—Hot-house Fruits.

983. In these Expensive Luxuries are included *pine-apples*, *grapes*, and *melons*; the two last being also grown in the open air. Grapes are remarkably wholesome, and are extensively used for invalids. Melons and pine-apples are quite the reverse, being less suited to a weak stomach than almost any other fruit; but from their cost in rearing they are placed beyond the reach of all but the luxurious, and therefore they need not be further alluded to here.

Sub-sect. C.—Foreign Fruits.

984. The Trade in this department is now a most extensive one, particularly in pine-apples, oranges, and lemons, which are imported into this country in enormous quantities. In the early stage of the West Indian trade, fifteen years ago, pine-apples were imported without flavour or juice, and were scarcely better than turnips, but they are now almost equal to the produce of our hot-houses, and are a great luxury to those who are fond of the flavour, being even within the reach of the lower classes at a penny a slice, which is often the price in the streets. More than 200,000 are said to be imported per annum, and most of these are sold by retail at 1s. or 1s. 6d. a-piece. This is effected by the aid of clippers, which, as in the case of oranges, bring the fruit from shore to shore in one quarter the time which was formerly taken, the passage up the channel being hastened when necessary by steam-tugs sent out for that purpose. Incalculable quantities of oranges are thus brought from Spain, Portugal, the Azores, Madeira, and Malta; and though the number has been fixed at more than 300 millions, yet this is in a great measure guess-work, as there is only a duty on them per bushel. For this trade alone more than 200 vessels are constantly employed, bringing oranges, lemons, limes, citrons, and nuts during the winter and spring, and afterwards plums, cherries, grapes, apples, pears, chestnuts, &c., until the oranges come in again. In London, the trade is monopolised by a limited number of wholesale fruit-merchants in the neighbourhood of Thames-street, Botolph-lane, and Pudding-lane, where large warehouses receive the consignments, only to hand them over as rapidly as possible to the lesser dealers in this commodity. The choice kinds come to Southampton, and thus avoid the tedious navigation of the Thames—the transit by railway only occupying a single night; but the great bulk of the fruit is brought into the river, and at once transferred to the above-mentioned localities. Liverpool is also now a great centre of the foreign fruit-trade, supplying itself, and also the adjacent manufacturing districts, where very little fruit is grown, in consequence of the destructive nature of the smoke from the factories.

985. The Wholesomeness of Oranges and Grapes is too well known to need dilating upon, and the opposite nature of pine-apples has been already alluded to. Lemons are only used for medicinal purposes, and for flavouring drinks of various kinds; but for this purpose they are exceedingly valuable. The foreign plums, apples, pears, &c., do not differ in this respect from their native representatives.

986. The Price of these foreign fruits varies greatly, according to the season and to the mode of purchase, whether by wholesale or retail. By a reference to the accompanying list of wholesale prices, it will be seen that the gross profit is fully fifty per cent.; but from this must be deducted the loss by decay, and by the necessity for forcing a quick sale to avoid it, which leads to the selling off certain portions to the small street-vendors, whereby there is almost always a great sacrifice rendered necessary.

Wholesale Price of Foreign Fruit.

Oranges—	£	s.	d.		£	s.	d.
St. Michael, firsts, per large box	2	4	0	to	2	11	0

	£	s.	d.		£	s.	d.
Oranges (*continued*)—							
St. Michael, seconds ditto	1	9	0	to	1	18	0
Terceira, per small box	0	15	0	,,	1	1	0
Lisbon and St. Ubes, per half-chest ...	1	9	0	,,	1	18	0
Sours, per chest ...	1	2	6	,,	1	5	0
Lemons—							
Messina, per case ...	0	16	0	,,	0	18	0
Ditto, per box	0	10	0	,,	0	12	0
Lisbon, per half-chest	0	18	0	,,	1	0	0
Malaga, ditto	1	0	0	,,	1	2	0
Citrons—							
Messina, in pickle, per pipe	11	0	0	,,	12	0	0
Madeira, ditto, ditto	12	0	0	,,	12	12	0
Lemon-juice, per gal.	0	2	6	,,	0	3	0
Nuts—							
Barcelona, per bag...	2	0	0	,,	2	2	0
Spanish, per barrel of 3¼ bushels	2	3	0	,,	2	4	0
Turkey, ditto	1	12	6	,,	0	0	0
Turkey filberts, ditto	1	12	6	,,	1	15	0
Chestnuts, Spanish, per brl. of 3¼ bush.	1	0	6	,,	1	2	6
Walnuts, French, do.	1	5	0	,,	1	7	6
Brazil, ditto	1	15	0	,,	2	0	0
Grapes—							
Almeria, per barrel	3	0	0	,,	3	5	0
Shell Almonds—							
Faro, per cwt.	3	0	0	,,	3	2	6
French, ditto	2	15	0	,,	2	18	0
Elvas plums, per box	0	4	0	,,	0	6	0

SUB-SECT. D.—SEASONAL TABLE OF FRUITS.

987. The following table shows the seasons of the year during which all the ordinary kinds of fruit are tolerably plentiful. They may often be obtained at other times, but only at extravagant prices.

Fruit.	When in Season.
Apples, non-keepers	July to September.
Apples, keepers ...	October to May.
Apricots, green ...	May.
Apricots, ripe	July and August.
Cherries, eating ...	June and July.
Cherries, morella	September.
Currants	July and August.
Cranberries, fresh	September and Oct.
Ditto, imported ...	November to Jan.
Figs	September and Oct.
Filberts	September and Oct.
Gooseberries, green	June and July.
Gooseberries, ripe	August and Sept.
Grapes, forced ...	May to September.
Grapes, open air ...	September to Nov.
Grapes, foreign ...	November to May.
Hazel-nuts	September and Oct.
Lemons	All the year.
Medlars	November and Dec.
Melons, forced ...	July to September.
Melons, foreign ...	July to September.
Mulberries	September and Oct.
Nectarines	August to October.
Oranges	January to June.
Peaches	September and Oct.
Pears, non-keepers	September and Oct.
Pears, keepers ...	October to February.
Pine-apples, forced	June to August.
Ditto, foreign ...	November and Dec.
Plums	August and Sept.
Quinces	October and Nov.
Raspberries	July and August.
Strawberries	June and July.
Walnuts	September and Oct.
Ditto, pickling ...	July.

SECT. 13.—ITALIAN WAREHOUSE GOODS.

988. GENERAL REMARKS.—The contents of the Italian warehouse are exceedingly miscellaneous, and can scarcely be arranged in any natural method, but must be examined in detail without much attempt at classification. Many articles sold at other shops in London are likewise kept at the Italian shops, as foreign hams and sausages, curry-powder, mustard, pepper, &c., the former of which are to be found at the provision dealers, and the latter at the grocers. But the description which most nearly accords with the contents of this shop is, that they are articles not solely of the nature of condiments, but still subsidiary to ordinary food, as *salad oil*, *olives*, *pickles*, *vinegar*, *anchovies*, *potted* and *preserved meats*, and *sauces*. These in the country are generally sold at the shops of the grocers, but in London at those which go by the name of Italian warehouses.

SUB-SECT. A.—OLIVES AND SALAD OIL.

989. THE OLIVE TREE is cultivated in Italy, Spain, and the south of France, partly for its unripe fruit, which are pickled and eaten as improvers of the taste for wine; and partly for the oil which is expressed from the ripe fruit, and which is of a very valuable nature for many purposes, and from its mild and tasteless qualities, it is extensively used in cooking and for making salad-mixtures.

990. THE FRUIT OF THE OLIVE is oval, with a smooth rind, and much resembles a small half-ripe plum. For the purposes of the dessert they are gathered when immature, and are then pickled in salt and water, and barrelled for exportation. The Italian olives are the best, then the French, and lastly the Spanish, which are not so well flavoured. The ripe fruit is gathered and gently pressed, by which the best quality of oil is procured, after which a stronger pressure is applied, so as to break

the kernels and produce a more copious flow of inferior oil, but still of a quality sufficient for domestic use. The oil is allowed to rest and deposit its fecula in the shape of mucilage and earthy matter, and it is then drawn off. The best qualities are at once deposited in flasks of the shape peculiar to the article, and guarded with rushes; whilst the secondary sorts are sent over to this country in jars and barrels. Italian oil is always distinguished under the heads of Florence, Lucca, and Gallipoli; the first being considered the best.

991. OLIVES are very often unnaturally coloured with copper, and made to assume a bright green, whereas they ought to be of a dirty yellowish-green colour. This is the case also with a great number of the preserved fruits and pickles, and should be avoided in consequence of the injurious effects of the salts of copper. Olive oil is also adulterated with inferior oils, as poppy oil, &c.—not injurious in point of health. The price of olives is about 2s. to 3s. per small jar. Olive oil is retailed at 9s. to 12s. per gallon, and salad oil (reputed Florence) in flasks at 9d. to 1s. 6d. each.

SUB-SECT. B.—VINEGAR.

992. VINEGAR is used in a great variety of ways in domestic economy, of which the chief are—1st, the direct flavouring of rich and greasy articles of food by means of its acid; and, 2nd, the preserving of vegetable and animal substances to be eaten without salt, in which state they are called pickles.

993. VINEGAR, as used in this way, is a compound of acetic acid and water, with a little colouring matter. It is produced in two ways—1st, by the addition of oxygen to alcohol in liquors in some of the numerous forms, as wine, cider, malt-liquor, fermented sugar and water, &c.; or, 2ndly, by the distillation of wood, the result of which is a kind of acetic acid, called *pyroligneous* from its origin. Diluted alcohol mixed with a little yeast, and exposed to the air, speedily absorbs oxygen, and becomes converted into vinegar; and the only difference in this article depends upon the kind of alcohol employed, the nature of the exposure to the air, and the temperature at which it is maintained. Hence the varieties of vinegar are considerable, and may be enumerated as *distilled vinegar*, *wine-vinegar*, *sugar-vinegar*, *ordinary malt-vinegar*, *malt-vinegar made by the quick process;* and, lastly, *wood-vinegar*.

994. DISTILLED VINEGAR is obtained from any of the above-mentioned vinegars by condensing their vapour in the ordinary way (see Spirits); it is perfectly colourless and extremely acid, and is pure acetic acid mixed with distilled water.

995. WINE-VINEGAR which is the best-flavoured of all, is made by placing in the bottom of a large cask a small quantity of ready-made vinegar, called the *mother*, which should occupy one-third of the cask. To this is added a portion of wine, and, at intervals of eight days, other small portions, until the cask is two-thirds full, beyond which the admission of air would be prevented, and oxidation retarded. The temperature of the room is kept up to about 80 degrees of Fahrenheit, or as near to that as possible, and should never rise or fall more than 5 degrees. As soon as the wine is converted into vinegar, half the quantity contained in the cask—that is, a volume equal to that of the wine added—is drawn off, still leaving the cask one-third full of vinegar, to which the wine is gradually added as before, and afterwards drawn off as vinegar. White-wine vinegar thus made is imported from Bordeaux and Orleans, but the greater part of that sold as such is composed of some one of the other kinds enumerated above, which may be made at a much lower cost than this high-priced vinegar.

996. SUGAR-VINEGAR is made by the addition of yeast to weak syrup, and then allowing the fermented mixture to have access to the air, at a temperature of 75 degrees to 85 degrees Fahrenheit, by placing it in casks two-thirds full, with their bungholes open, and a hole bored at each end, near the top, as well. From eighteen to twenty-four ounces of sugar are to be added to each gallon of boiling water, and when the liquid is cooled to 75 degrees add five ounces by measure of beer-yeast. Let this stand, and in two or three days rack off the clear liquid into a cask, which is not to be more than two-thirds full, and add one ounce of cream of tartar and one ounce of crushed raisins to the above quantity. Then keep it for two or three months in a warm situation, at a temperature not lower than 70 degrees, and keep out the dust by pasting a piece of paper with holes pricked in it over the bunghole. By this method, however, at least three months will be required to produce vinegar, unless a portion of that fluid is used to commence with, as already described in the making of wine-vinegar.

997. MALT-VINEGAR is made by the ordinary process, much in the same way as sugar-vinegar. Dr. Ure directs as follows: "One boll of good barley-malt, properly crushed, is to be mashed with water at 160 degrees Fahrenheit. The first water should have that temperature, the second must be hotter than 160 degrees, and the third water for the extraction of all the soluble matter may be boiling hot. Upon

[illegible] 32.

the whole, not more than a hundred gallons of wort should be extracted. After the liquor has cooled to 75 degrees Fahrenheit, three or four gallons of beer-yeast are poured in, and well mixed with a proper stirrer. In thirty-six or forty hours, according to the temperature of the air, and the fermenting quality of the wash, it is racked off into casks, which are laid upon their sides in the fermenting apartment of the vinegar works, which should be kept at a temperature of 70 degrees at least; in summer, partly by the heat of the sun; but in general, by the agency of proper stoves, as above described. The bunghole should be left open, and the casks should not be full, in order that the air may act over an extensive surface of the liquor. It would be proper to secure a free circulation of the air by boring a hole in each end of the cask near its upper edge. As the liquor by evaporation would be generally a few degrees colder than the air of the apartment, a circulation of air would be established in at the bunghole and out by the end holes. By the ordinary methods three months are required to make this vinegar marketable, or fit for the manufacture of sugar of lead."

998. THE QUICK PROCESS FOR MAKING VINEGAR is dependent upon the fact, that as oxygen is necessary to the completion of acetification, this action may be hastened by continually offering a fresh supply to the fluid in the progress of its conversion. A patent was taken out some years ago by a Mr. Ham, of Bristol, founded upon this principle, and it has, for some years, been acted on with great advantage by Messrs. Hill, Evans, & Co., of Worcester, whose make is justly celebrated for the strength of its acid and freedom from adulteration. In their vinegar manufactory the process is completed in twenty days, or sometimes even less, depending upon the proportion which the fluid bears to the acetifier in which it is placed. This machine is worked by steam, as are all the assistant parts of the apparatus, viz., the mash-tubs, boiling-coppers, &c. By the aid of malt and boiling-water, and at the usual temperature, an infusion is made as in brewing, which is also called wort, and to this a small quantity of yeast is added, after which it is pumped into the acetifier and worked constantly through it for the time required to absorb oxygen enough to convert the wort into vinegar. The following is a correct description of the acetifier, which, however, may be of any size suited to the wishes of the maker; but being a patented article, its use is forbidden to all those who would employ it for generating vinegar *for sale*. A vat (*fig.* 84, A B) is constructed in the usual way, of sound timber; and those now in Messrs. Hill & Co.'s works hold about 7000 or 8000 gallons. This vat is divided into two portions by an open partition, extending from A to B; the lower being for the reception of the wort, is heated by a coiled-tube of pure tin receiving a stream of hot water for that purpose; the upper contains a number of properly-prepared fagots of birch-twigs. Beyond this arrangement all that is necessary is to pump up the wort by means of a wooden pump (C D) of rude, but efficient, construction, which is lowered by a weight attached to its piston-rod, and raised by a cord attached to the crank (E), also worked by the engine. By means of this pump the wort is constantly being raised from the lower chamber of the vat and poured upon the fagots through an ordinary spout, and as the wort is withdrawn from the vat below, air is admitted to supply its place through several holes made in the sides just beneath the division (A B), and at other times driven out again by the descent of fresh quantities of wort, so that, in fact, a rude kind of respiration is established. But to render this apparatus still more efficient, the wort must be regularly sprinkled over the fagots, and not poured, as it would be from a spout; and this object is effected by arranging a flat disk of wood above the fagots and beneath the spout, with radiating grooves ending in small holes, arranged at various distances from the centre. This disk again (as shown at F G) is made to revolve by a cog-wheel, and in its revolution it spreads the wort, drop by drop, over the fagots, and thus ensures a constant and steady, as well as uniform, supply of it to the whole mass of them, which again are furnished with fresh air by the action of the pump. After fifteen or twenty days the superintendent finds, on examination, that the wort has become vinegar, and then withdraws it as such, and supplies its place with a fresh quantity of new wort. The object is to avoid the loss of alcohol and vinegar by evaporation, and of money by the loss of time during which it is lying idle.

999. VINEGAR obtained from the distillation of wood is also called pyroligneous acid, which, when it first comes over, is mixed with several other products, as wood-naphtha, tar, &c., from which it is separated by the following method:—The wood generally employed is either oak or beech, either of which is subjected to destructive distillation at a red heat in an iron cylinder of large dimensions, to which a worm or condenser is attached; a sour, watery liquid, a quantity of tar, and much inflammable gas pass over, while charcoal of

excellent quality remains in the retort. The acid liquid is subjected to distillation; the first portion being collected apart for the sake of the naphtha which it contains; the remainder is saturated with lime, concentrated by evaporation, and mixed with a solution of sulphate of soda; sulphate of lime is precipitated, while the acetic acid combines with the soda. The filtered solution, which is composed of the brown pyroligneous acid of the shops, is evaporated to the point at which it crystallizes; the crystals are then drained as much as possible from the dark, tarry, mother-liquor, and deprived by heat of their combined water. The dry salt is then cautiously fused, by which the last portions of tar are decomposed or expelled; it is then re-dissolved in water, and re-crystallized, the result being pure acetate of soda, which readily yields hydrated acetic acid by distillation, after the addition of sulphuric acid, the latter having a greater affinity for the soda, and therefore liberating the former.

1000. SUCH ARE THE VARIOUS PROCESSES by which vinegar is made for the use of all classes. Of these, the white-wine vinegar from France is the best in flavour, when obtained in its natural purity. The vinegar of Hill, Evans, & Co., and that made by Hill and Underwood of Norwich, appear to be free from all adulteration; and the latter is a very strong vinegar also. Vinegars are made of six different strengths, numbered 16, 17, 18, 20, 22, and 24; but these do not always contain the same relative proportions of pure acetic acid, although the higher numbers are always stronger than the lower. No. 24 should contain about 5 per cent. of pure acetic acid, with a specific gravity of 1022.

1001. VINEGAR IS ADULTERATED in various ways, as—1st, by inordinate dilution with water; 2nd, by the addition of sulphuric acid; 3rd, by the substitution of pyroligneous acid; and, 4th, by the use of burnt-sugar as a colouring agent.

1002. INORDINATE DILUTION WITH WATER is detected by any test which will discover the strength, or rather the weakness, of the vinegar in point of acidity; but this in practice is a difficult process, and only to be managed by an experienced chemical manipulator. In principle, it depends upon the quantity of carbonate of soda which a given volume of vinegar will neutralize, and as it is known that one atom of the recently-ignited carbonate of soda will saturate one atom of pure acetic acid, it follows that for every atom of soda so saturated by any amount of vinegar, there will be contained in it an atom of pure acetic acid, and upon this principle the trial is made.

1003. SULPHURIC ACID is detected in vinegar by means of the chloride of barium, which has a greater affinity for sulphuric acid than for chlorine, and the new salt being insoluble, is precipitated, collected, and weighed. All vinegars, however, and especially those made with water containing much sulphate of lime, are more or less mixed with sulphuric acid in a state of combination—that is to say, in the condition of this sulphate—it is necessary therefore that the acid should be made out clearly to be free from sulphuric acid before the charge of adulteration can be brought; and this, again, requires the aid of an accomplished chemist.

1004. THE VINEGAR CONTAINING PYROLIGNEOUS ACID cannot by any chemical means be detected from that made from malt, sugar, or wine; and therefore, though the substitution is supposed to be very commonly made, there is no proof of its existence, the slight smell of creasote being the only means of arriving at any conclusion.

1005. From the examination made by Dr. Hassall and Dr. Letheby of twenty-eight samples of vinegar, it resulted that "*seven* of the samples were entirely free from sulphuric acid or oil of vitriol; *eighteen* were adulterated with that powerful and corrosive mineral acid, the amount of which was variable, and often very considerable—from 0.63, the lowest, to 6.02, the highest quantity in 1,000 grains; that *two* of the samples contained it in very small quantity only; that in *three* samples it was present in considerable amount; that *six* contained it in very considerable amount; that in *seven* samples it was present in immense quantity; that the *acetic acid* also varied very considerably in the different samples—the highest proportion being, in 1000 grains by measure, 56.66 grains, or 5.66 per cent., and the lowest 27.63, or only 2.76 per cent.; that in *eight* samples the acetic acid was present in amount over *five* per cent., which is above the standard strength; that in *twelve* samples the quantity exceeded *four* per cent.; that in *seven* it was over *three* per cent.; that in *one* the quantity of acetic acid present was so exceedingly small as to be under *three* per cent.—that is, but little more than half the proper strength; that the vinegars which were ascertained to be *free* from sulphuric acid or oil of vitriol were those of the following makers:—Messrs. Hill, Evans, & Co., of Worcester; Messrs. Hill and Underwood, of Norwich; Messrs. Swann & Co., of Stourport; Messrs. Potts & Co., Bridge-street, Southwark; and Messrs. Kent and Sons, of Upton-on-Severn."

1006. VINEGAR is retailed at the following prices:—

	s.	d.	
Genuine white-wine vinegar	3	6	per gal.
Good English vinegar, of full strength	2	9	,,
Strong pickling vinegar ...	2	0	,,
Ordinary vinegar, as sold in the shops ... 1s. 2d. to	1	6	,,

SUB-SECT. C.—PICKLES.

1007. A GREAT VARIETY OF PICKLES are to be bought at the Italian warehouse, some being preserved in clear distilled vinegar, and generally on that account made to look of a bright green by artificial means, while others are mixed with turmeric and spices, and are therefore prepared with ordinary vinegar, without any consideration for colour. Portions of cauliflowers, gherkins, French beans, young onions, capsicums, &c., are first soaked in salt and water to get rid of any adventitious matters, and then are stored in distilled vinegar at a boiling temperature. The vinegar is either directed to be boiled in a copper vessel, or else verdigris, which is a salt of copper, is actually added to the mass, the consequence of which is that a bright green colour is evolved, and that the pickles look of a most beautiful but unnatural hue. The process adopted by Dr. Hassall for the detection of this copper is the following:—"About 3 oz. of the green vegetables of each of the pickles, after having been sliced with a glass knife, were incinerated, care being taken to avoid every source of contamination; the ash having been pulverized, was treated with twenty drops of pure nitric acid; 1 oz. of distilled water, after the lapse of a short time, was added, the solution filtered, and treated with excess of ammonia; if copper was present the solution became more or less blue, according to the amount of the metal present." From the examination of twenty samples of pickles, bought at different shops in London, it resulted, according to the analysis of the *Lancet* Commissioner, "that the vinegar used for pickling is of a very weak description, the per centage of acetic acid ranging between 1.48 and 2.91. * * * * *Vinegar of good quality ought to contain from four to five per cent. of pure acetic acid.* That nineteen out of twenty of the vinegars submitted to analysis, poor as they were, yet owed a portion of their acidity to sulphuric acid, the amount of which varied in the different samples from 0.38 to 2.52 in the 1000 grains; *the largest quantity of this acid being detected in the vinegars in which the red cabbages were pickled.* That in the whole of the sixteen pickles analyzed for copper, that poisonous metal was discovered in various amounts; *two* of the samples contained a small quantity; *eight*, rather much; *one*, a considerable quantity; *three*, a very considerable quantity; in *one*, copper was found in a highly deleterious amount; and in *two* in poisonous amounts. It will be observed that the pickles which contained the largest quantity of copper, are those which consist entirely of green vegetables, as gherkins and beans." To such an amount is this adulteration by means of copper sometimes carried, that a bright iron rod dipped in the vinegar in which the vegetables are immersed, speedily becomes coated with copper. For this test half an ounce of the vinegar is sufficient, in which a piece of iron wire should be immersed for three or four hours, and if copper to any serious amount is present, it will be deposited on the iron to such an extent as to give it the appearance of copper instead of iron. Any one may readily try this experiment for themselves, and test their pickles by it.

1008. THE VEGETABLES of which the pickles are made, are partly collected in Great Britain, and partly imported from abroad, being in either case stored in salt and water until the pickle-makers require them for use, when they are immersed in the vinegar, and are at once ready for sale.

1009. MIXED PICKLES, consisting of all kinds of vegetables thus preserved, are the favourites with the public, and sell usually at from 9d. to 1s. 3d. per bottle, containing about 12 oz. Real *Indian pickle* is much more hot than English pickles, and is sold at nearly treble the price; pickalilli being a British imitation of this, and sold at the same price as ordinary English pickles.

SUB-SECT. D.—ANCHOVIES AND SARDINES.

1010. The above fish are sold by the Italian warehouseman, and not by the fishmonger, inasmuch as they are not natives of Great Britain or its seas. They are therefore included in the present section, rather than with that on "Fish."

1011. GENUINE ANCHOVIES are largely imported into this country preserved in brine; but they are said to be sometimes personated by sprats and sardines, though in the examination made by Dr. Hassall of twenty-eight samples, none contained any other fish than anchovies. His only cause for complaint was for the use of inferior qualities of fish, and the introduction of large quantities of colouring matter, usually Armenian bole. Now, it appears that there are four varieties of the anchovy—viz., 1st, the Gorgona; 2nd, the French; 3rd, the Sicilian; and, 4th, the Dutch; their value being in accordance with their position in the above list. Of these twenty-eight samples one-third only contained Gorgona anchovies, although in almost all cases the bottles are thus labelled; seven were composed of Dutch fish only; and two of Dutch and real anchovies. But in twenty-three of the samples the brine was charged with either Armenian bole or Venetian red, the quantity varying considerably in amount, and in most cases the brine was saturated with these earthy powders to such an extent, that they might be obtained and collected from the bottom of the bottles almost by tea-spoonfuls. Dr. Hassall remarks, that the Dutch fish may be distinguished from the true anchovy by its being invariably deprived of its scales, by its large size, white flesh, general coarseness, and by the very evident scale-marks which extend over the whole surface. "The practice," he remarks, "of imparting an unnatural red colour to the fish and brine, by means of Venetian red and Armenian bole, is in the highest degree reprehensible. To saturate an article of food with large quantities of earthy colouring matters, is objectionable on the score of cleanliness; it is equally so as regards health, for this earth contains a large quantity of iron. Now, this medicine is not suited to all cases, and it may even sometimes be productive of mischief; at all events, when it is desirable to take iron, we should prefer that it be prescribed under the advice of a physician, and not administered in an article of food by our grocer, fishmonger, or Italian warehouseman. Again, it is not an uncommon thing for Venetian red to contain a large quantity of red-lead; and although in the analysis we have made we are happy to state that we have not detected that poisonous metallic oxide in a single sample, yet there is no question but that red-lead is occasionally to be found in bottled anchovies." The object of using these earths appears to be to conceal the dirty look of the brine, which cannot be kept clear from the small particles of the fish, scales, &c., and from impurities in the coarse salt used.

1012. **Anchovies** are generally sold in small bottles with the brine, and often, in addition, the above-mentioned red earth. It is to be hoped the dealers will see the necessity for avoiding this contamination; but at present it is almost impossible to procure them in an undefiled state. The price varies from 6d. a small bottle, containing about 6 oz., to double that price; 2s. 6d. being the general price for a jar or bottle containing about 12 oz.

1013. **Sardines** are sometimes imported in brine, but in almost all cases now they are preserved in oil, in small tin cases, holding from half-a-pound to a pound, and containing in each on the average about 12 or 24 fish respectively, at 1s. and 2s. the case. They are a very wholesome and agreeable addition to the breakfast, luncheon, or supper-table, and in great request.

SUB-SECT. E.—POTTED AND PRESERVED MEATS.

1014. **These Articles** have been already alluded to at page 253, where they are entered as part of the stock of the provision-dealer. They are, however, chiefly retailed by the Italian warehouseman in London or by the grocer in the country. Turtle-soup, invalid-turtle, venison, game, poultry, beef, veal, ham, shrimps, prawns, herrings, salmon, and many other articles are thus preserved, merely by boiling and the exclusion of the atmospheric air; and they are sold at prices equal to about the average value of each article, excepting turtle, which may be thus purchased at less than half the pastrycook's price.

SUB-SECT. F.—SAUCES AND CURRY-POWDER.

1015. At every Italian warehouseman's in London, and at each grocer's and druggist's shop in the country, some one particular sauce is put forth as the best in the world for all purposes. At the bottom or foundation of all these is vinegar, with the addition of spices, and sometimes of the juices of vegetables, making the sauces thicker than vinegar. Such is the celebrated Worcestershire Sauce of Lea and Perrins, which is made from a receipt of the late Lord Coventry, and which is an excellent and wholesome addition to most articles requiring it. Of the same nature, also, are Soyer's Relish, and his Sauce Succulente; also the King of Oude's Sauce, the Reading Sauce, Harvey's Fish Sauce, and others too numerous to mention. It is quite true that "a good appetite is the best sauce;" but when there is a deficiency in this respect, or when the stomach is at all weak, a wholesome sauce will often enable it to digest food which would otherwise nauseate it; but it should not be used as a provocative to the appetite, but rather as an aid to digestion. The following articles are used by the various sauce-makers to compound their sauces, some using one receipt and some another, with varying proportions:—Anchovies, tomato, garlic, shalot, mushroom, oyster, and walnut ketchup; sorrel, raisins, tamarinds, and figs; fenugreek, coriander, carraway, and cumin seeds; soy (Indian and British made), and a variety of herbs and spices already described.

1016. **Indian Soy** is imported from China, and is a thick treacly-looking fluid, with a sweetish taste, but with a slightly-pronounced flavour peculiar to itself. It is supposed to be made from the seeds of the *Dolichos soya*. The British imitation is made by boiling the seeds of the above plant in water till they become soft; then add an equal weight of bruised wheat, and keep the mixture in a warm place for twenty-four hours. To this add a quantity of water equal to both, and salt to the same weight as each; put the whole into a stone jar, and cork it up for two or three months; then press out the liquor, which resembles Indian soy, but is not quite equal to it.

1017. ANCHOVY SAUCE is made by pounding genuine anchovies in water, and simmering the mixture for a short time, after which a little cayenne pepper is to be added, and the whole strained through a hair-sieve, by rubbing with the hand or a spoon. If the anchovies are genuine, the sauce will be good; if otherwise, it will be deficient in the proper flavour.

1018. TOMATO SAUCE, according to a very good receipt, should always be prepared as follows:—Bruised tomatos, 1 gallon; salt, 8 oz.—mix.; and after three days, squeeze out the juice, to each half-gallon of which add shalots, 4 oz.; black pepper, 2 drachms: boil for half-an-hour, strain, and add mace, allspice, ginger, and nutmeg, of each half-an-ounce; coriander seeds and cochineal, of each 2 drachms. Simmer gently for half-an-hour, strain, and when cold bottle it.

1019. ADULTERATIONS to a great extent are also practised in these sauces, but apparently not of a deleterious character, no metallic salt having been detected by Dr. Hassall, and the colouring matter being chiefly Armenian bole or cochineal.

1020. THE PRICE of most of these sauces is from 1s. to 1s. 6d. per bottle.

1021. CURRY-POWDER is commonly sold at the Italian shops, but also by grocers, especially in the provinces. It is largely consumed by all but the poorest classes, who do not seem to have acquired the taste for curries. It is a mixture of spices with turmeric, and its use has been imported from the East, where it forms a kind of national dish. Curry-powder, of a good quality, is made of turmeric, black-pepper, coriander seeds, cayenne, fænugreek, cardamoms, cumin seed, cinnamon, ginger, allspice, cloves, and tamarinds, or at all events of the greater number of these articles, some receipts omitting one or two, and others even more than that number. Most of these spices have already been described under their respective heads, and the remainder are not of sufficient importance to require a more particular reference here. Coriander seed, which forms the chief ingredient in all, is a warm carminative, full of essential oil, and very wholesome.

1022. THE FOLLOWING RECEIPTS are those most usually employed for making curry-powder:—

(1) Coriander seeds, 13 oz.
Black pepper, 5 oz.
Cayenne, 1 oz.
Fænugreek seeds, 3 oz.
Cumin seeds, 3 oz.
Turmeric, 6 oz. Mix.

(2) Coriander seeds, 18 oz.
Black pepper, 2 oz.
Cayenne, 1 oz.
Turmeric, 3 oz.
Cumin seeds, 3 oz.
Fænugreek seeds, ½ oz. Mix.

(3) Coriander seeds, 1 lb.
Black pepper, 3 oz.
Turmeric, 8 oz.
Cumin seeds, 4 oz.
Cayenne, 4 oz.
Cinnamon, 1 oz.
Cardamom seeds, 1 oz.
Tamarinds, 2 lb. Mix.

(4) Coriander seeds, 3 lb.
Turmeric, 8 lb,
Black pepper, 1 lb.
Mustard, 1 lb.
Pepper, 1 lb.
Cayenne, pepper, 4 oz.
Cumin seeds, 4 oz.
Cardamom seeds, 8 oz.
Powder and mix.

(5) Coriander seeds, 4 lb.
Turmeric, 4 lb.
Pimento, 1 lb.
Cayenne, 1 lb.
Capsicum berries, 1 lb.
Cardamom seeds, 4 oz.
Mace, 1 oz.
Cloves, 1 oz.
Cinnamon 1 oz. Mix.

1023. THE ADULTERATION OF CURRY-POWDER is extensively caried on, seven only out of twenty-six samples examined by Dr. Hassall proving to be free from spurious mixture with some one or other of the following articles—viz., red-lead, starch, ground rice, and salt. The first of these, highly poisonous as it is, was detected in eight instances, or nearly in one-third of the whole number; and as the quantity of curry-powder taken at a meal is considerable, a large amount of this noxious metallic salt finds its way into the system. The remedy is simple enough, as the powder is easily made at home, and only requires the ordinary kitchen-mortar for its proper mixture.

1024. THE PRICE OF CURRY-POWDER, as sold in the shops, is from 9d. to 1s. per

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the vendor stamped upon it. This regulation is also adopted in Belgium and Switzerland. The safest plan is the easiest, namely, to avoid such articles altogether; but as children will indulge their appetite for such things, it surely ought to be provided that there should be a penalty for furnishing them with poison in the shape of tempting articles such as these. Many cases have occurred in which death has very nearly taken place from partaking of these poisons; and though I believe the makers are now rendered more cautious than they were, by the exposure in the *Lancet* and elsewhere; yet there is no reason to suppose that they have entirely abandoned the practice.

1026. WHITE OR TRANSPARENT CONFECTIONERY, as sugar plums, lemon drops, &c., do not appear to be wholly free from risk, though comparatively innocent. The former have been found to contain white-lead; the latter are sometimes adulterated with sulphuric acid. The hydrated sulphate of lime is generally added to white ornaments not intended to be eaten, together with wheat-flour, potato-flour, or arrowroot; but these are all innocent as compared with the ingredients of coloured confectionery, and are not worth notice, except perhaps to avoid them.

SUB-SECT. B.—PASTRY.

1027. PASTRY is seldom purchased for domestic use, excepting on special occasions, when social duties call for some extraordinary display. In such circumstances it often happens that it is cheaper and better to obtain what is wanted from the pastrycook at an advanced price, than to hire a cook for the occasion, who would perhaps turn everything "topsy-turvy." Hence it is that this kind of pastry is also patronized by some good managers on occasions less marked than those above alluded to, as they think that the trifling loss by the increase of price is more than counterbalanced by the absence of fresh servants in the kitchen. Of course this plan is only to be encouraged where the mistress is incapable from any cause of attending to these *minutiæ* herself, and where she is not able to afford a cook who is a pastrycook herself. When neither of these causes exists, home-made pastry will always be found not only more economical, but also more wholesome than that bought at the shops, where inferior butter and preserves are often made by art to assume the appearance of first-rate articles; but, nevertheless, the stomach discovers the imposture, and its owner is sure to be made to pay the penalty.

SECT. 15.—PURCHASED BEVERAGES.

1028. GENERAL REMARKS.—Drinks, as sold to the public, consist of two principal varieties—1st, those which are fermented; and, 2nd, unfermented liquids, as soda-water, ginger-beer, and lemonade.

1029. FERMENTED DRINKS are comprised under the three heads of—1st, *malt liquors*; 2nd, *cider* and *perry*; and, 3rd, *wine* and *spirits*.

1030. FERMENTATION is the process by which saccharine matter or starch is converted into alcohol. The explanation of this process, propounded by Liebig, though purely hypothetical, is very generally believed to be a true one—at all events, it is accepted for want of a better and clearer explanation of what is after all perfectly unintelligible. It has long been known that one of the most indispensable conditions of fermentation is the presence in the fermenting liquid of some azotized substance, whose decomposition proceeds simultaneously with that of the body undergoing the change. This substance is called a *ferment*, of which there are several, all being composed of albumen in some shape, which in a moist state has a natural tendency to putrify and decompose spontaneously. Liebig imagines, therefore, that when these substances in the act of undergoing change are brought into contact with neutral ternary compounds of small stability, such as sugar, the molecular disturbance of the one body (the ferment) already in a state of decomposition is, as it were, propagated to the others, and this brings about a destruction of the equilibrium previously existing. But, leaving theory out of the question, it is certain that decomposing azotized bodies (ferments) not only possess energetic powers of exciting fermentation, but that the *kind* set up is mainly dependent on the stage of decomposition in the ferment itself.

1031. ALCOHOLIC OR VINOUS FERMENTATION is the result of the action of an azotized ferment on any saccharine solution. Pure sugar dissolved in water, and kept in an open or closed vessel, remains unchanged for any length of time, but on the addition of any putrescible azotized matter, in the proper stage of decay, the sugar is converted into alcohol, accompanied by an escape of carbonic acid gas. Blood, or white of eggs, or flour paste, when putrid, will all effect this change; but by far the most potent alcoholic ferment is *yeast*, which is the insoluble yellowish viscid matter deposited from beer in a state of fermentation. Wine, beer, &c., owe their intoxicating properties to the alcohol which they contain, the proportion of which in them to, the watery particles varies greatly. Port, sherry, and some other strong wines, contain from 19 to 25 per cent., while in the lighter wines of France and Germany, it sometimes falls as low as 12 per cent. Strong ale contains about 10 per cent.; and ordinary spirits, 40 to 50 per cent. In making wine from the grape, the expressed juice is simply set aside in large vats, when it undergoes spontaneously the necessary change. The vegetable albumen of the juice, which is an azotized compound, absorbs oxygen from the air, runs into decomposition, and in that state becomes a ferment to the sugar, which is gradually converted into alcohol. If the sugar be in excess, and the azotized matter definite, the resulting wine remains sweet; but if, on the other hand, the proportion of sugar be small, and that of albumen large, a dry wine is produced. Vinous or alcoholic fermentation has always a tendency to go on to the acetic, and in course of time all alcoholic compounds, not being pure alcohol and water, have a natural tendency to assume the acetic fermentation, and hence, all wines turn sour with age. See VINEGAR, page 308.

1032. ALCOHOLIC DRINKS are all stimulant to the whole system, in proportion to the amount of alcohol contained in them; but many of them are cordial and stomachic also, depending upon the essential oil, or upon the extractive matters dissolved in the liquid. The properties of the several fermented liquors are much affected by these substances held in solution and not converted into alcohol; and in some liquids, as beer, porter, &c., they preponderate greatly, and afford considerable nourishment to the body as well as a mere temporary stimulus to the nervous system and circulation. Hence, their temperate use has always been encouraged, except by those who think it better that all should be deprived of a useful friend than that any should be allowed to make their friends into enemies. Intoxication, however, is a fearful vice; and when we see it carried to the extent which it is, it can scarcely occasion surprise that benevolent men should be anxious to put a stop to this habit by any means, however stringent.

SUB-SECT. A.—MALT LIQUORS.

1033. MALT LIQUORS, as sold to the public, comprehend a considerable variety of articles, all, however, made, or professing to be made, of malt and hops, together with sugar in some cases. The division is founded primarily upon the colour of the malt, which is either high-dried or pale—the former being used in brewing *stout* and *porter*, while the latter enters into the composition of *ale* and *beer*, in all their multifarious forms known as *Burton ale*, *Scotch ale*, *Kennett ale*, *pale ale*, *bitter beer*, *India pale ale*, and last and least, *table-ale* and *table-beer*, sometimes called *small-beer*.

1034. THE MATERIALS allowed by law for the brewing of malt liquors for sale consist of *malt*, *hops*, *sugar*, and *water* only, with *isinglass* to refine it; to which, it appears, are surreptitiously added by the retailers, in many cases, *salt*, *tobacco*, *treacle* or *liquorice*, *cocculus indicus*, *capsicum*, *sulphate of iron*, and *quassia*, or other cheap bitters, together with certain spices for the purpose of adding to the flavour.

1035. MALT consists of grain in which the starch has been converted into sugar by permitting the germinating process to go on to a certain point, and then putting an end to it by heat. It may be made from barley, wheat, oats, rye, or maize; but the first of these is almost always selected for the purpose. The operation of malting is conducted by steeping the barley in water until the grains become swollen and soft, and then piling it in a heap called a *couch*, to favour the development of heat caused by the absorption of oxygen from the air. After this the grain is spread more or less according to the weather, so as to keep the heat at the proper standard throughout (*flooring*). During this process the barley throws out a rootlet and a germ, and at the same time the peculiar chemical substance called *diastase* is developed, which has the property of converting starch into dextrin, and afterwards into grape-sugar. When the germination has proceeded far enough, the vitality of the seed is destroyed by kiln-drying, and according to the heat employed the malt will be *pale*, *amber*, or *brown*, or, in some cases, *black*. In malt of these different shades, the saccharine matter is found to be in the greatest perfection in the pale malt, which consequently produces the strongest and best beer; amber malt being only slightly scorched, its sugar is very nearly as well developed as in the pale; but in brown malt the scorching has proceeded so far as to diminish the sweetness considerably, and in the black variety it is lost in the bitter taste of the caramel, into which the sugar is converted. In its conversion into malt, barley loses *weight*, but gains in *bulk*; so that 100 lbs. of barley produce but 92 lbs. of malt, while 100 bushels of the former are converted into 108 bushels of malt. The quantity of malt annually made in the united kingdom, which is almost entirely consumed at home, amounts on the average to nearly forty millions of bushels, or about 1½ bushel per head per year, which will give about 25 gallons of beer, of average strength, to each individual; and as a large proportion are young children or invalids, and another large class never indulge in this kind of drink, the actual amount left for those who do indulge in it is very considerable. In London the proportion is still greater, for it appears that fifteen public brewers consume about five millions of bushels per year, or about two bushels per head for the whole population of the city and suburbs, independently of the numerous class of small brewers scattered throughout the suburbs. The process of malting is strictly supervised by the excise.

1036. In Selecting Malt, the grains should be large, with a full, round, plump body, and no appearance of shrivelling; the skin should be thin, and on breaking the grain, which should be readily effected, they should be full of flavour, of a mellow, sweet taste, without rawness. If the broken surface is drawn across a board, it should leave a mark resembling that made by cream-coloured chalk. When there is an admixture of barley, it will sink in water, whereas the malt will invariably swim, if properly made. Sometimes part of each grain only is converted into malt, and then the one end sinks under the water, and the other swims; but, in trying this experiment, the malt must be unbroken. Good malt should have no admixture of roots or dust, and all its individual grains should be of equal size, taste, colour, and texture, or very nearly so. It is generally ground in a coarse degree a day or two before brewing, and it should weigh from 40 lb. to 48 lb. per bushel.

1037. The Price of Malt has for some years fluctuated between 7s. and 9s. 6d. per bushel; but as the duty is now reduced, it is to be hoped that the price will undergo a proportionate reduction.

1038. Hops are the flowers of the hop plant, which is extensively cultivated in Kent, Sussex, Worcestershire, and Herefordshire, as well as in Belgium and in the United States, from which countries they are now imported when bad seasons raise the price high enough in England to warrant the venture. A particularly rich and loamy clay is required for the successful growth of this plant, which also demands enormous supplies of animal manure in a highly concentrated form, as fish, woollen rags, night-soil, and other highly-nitrogenized products. With all the care in the world, and under the most favourable circumstances, hops are a very uncertain crop, so that the growers and dealers are induced to gamble and speculate in them to the same extent as the members of the Stock Exchange and their clients, or the supporters of the turf. In defence of this practice, which is confined to this crop among the agriculturists, they allege that betting is induced by a desire to diminish the risk incurred; and I fully believe that this is to a certain extent correct. The betting is always on or against a certain amount of duty, which is high or low, according to the crop; and thus the large holder or grower of hops is induced to back a low amount of duty, so that if the general crop turns out large and he gets in consequence a low price, he will at the same time receive the bet which he has laid. If, on the contrary, a farmer has, or is likely to have, a bad crop, he backs a high duty, hoping to retrieve his own bad growth by receiving the amount of his bet. Sometimes, however, the grower loses both ways; but this cannot apply to the holders of hops in warehouse, who are the chief promoters of this kind of speculation, and who almost invariably guard against loss in this way. The Sussex and Mid-Kent hops are the strongest and the most highly-flavoured; while the Worcestershire hops, including those of Herefordshire, which are all classed as such, are of more delicate flavour, peculiarly adapted for the brewing of the pale ale so much in fashion at present. Hops are gathered by hand in September and the early part of October, and rapidly kiln-dried; after which they are closely-packed in "pockets" or "bags," and become a solid mass, of a bright or greenish yellow colour, with a fine dust permeating it, in which the principal flavouring matter resides. When rubbed in the hand they feel sticky, and leave a yellow powdery stain, with a powerful and peculiar odour.

1039. In Selecting Hops, much depends upon the use for which they are intended. If for pale ale or table-beer, new hops of a pale yellow colour and mild, but fine flavour, should be chosen; and for strong ales, porter, or stout, the strongest and most aromatic hops of the south district are to be preferred; but here, also, new hops are always more profitable than old ones. Hops one year old have not lost much of their strength; but after that age, every successive year takes away from the flavour and strength, after three or four years the hop is comparatively worthless.

1040. The Active Principle of the Hop resides in a bitter resinous matter, denominated *lupulin*, and also in an essential oil, both of which appear to act on the nervous system of the human being, and also upon the beer itself by preventing decomposition.

1041. Hops are sold at all prices, from £4 10s. to £15, or even £18 per cwt. The average retail price of good hops is from 1s. to 1s. 6d. per lb.

1042. **Water**, called by the brewers *liquor*, is the next essential material to produce beer, and upon its quality will depend, in a great measure, that of the malt-liquor of which it forms a part. Burton ale and beer have always been celebrated; and it appears that this well-deserved character depends mainly upon the quality of the water, which contains an unusually large proportion of sulphate of lime, together with carbonate and muriate of lime. It is well known that these salts exert a considerable depuritive power on vegetable juices, as in the manufacture of cane-sugar, &c., and in brewing they supersede the necessity for "finings," the ale brewed with this water becoming clear and bright almost directly. The greater part of the lime is precipitated in combination with the mucilaginous matters, and hence the water, as it exists in the beer, is much more soft than in its natural state. Thames water also appears to make good beer, but it requires a considerable quantity of "finings," as it is comparatively deficient in sulphate of lime. For this reason rain-water, though more capable of extracting the virtues of the malt and hops than river or spring water, is not so well suited either to make it fine or to keep it from being converted into vinegar.

1043. **Yeast** has already been partially alluded to in the sub-section on bread, at pages 279, 280. It may at any time be made from nitrogenized materials, without the intervention or use of any particle of its own nature, usually called a *ferment*; but this latter method is generally adopted. As yeast is employed for fermenting wort, so, in the same way, when it is wanted for that purpose, the surplus yeast is had recourse to from one brewing to another; and as it is very important to use none but that obtained from a good brewing, it is imperative that great caution should be exercised in its selection, inasmuch as in this case, as in many others throughout nature, "like produces like." The best yeast for working beer (called "pitching the tun") is that which is thrown out of the bungholes of the casks into what are called the stillions, to be presently described. In summer it should not be more than two or three days old, but in winter it will keep for a week or even a fortnight, though it always loses strength by keeping. It should be kept in a cool place, in cold water, which should be changed every second day. The kind of yeast necessary for setting to work any particular kind of malt liquor, is of some importance, as it appears that it should, if possible, be obtained from a similar parent stock to that from which it is intended. Yeast from strong ale works more slowly, but at the same time more strongly than that from small beer, so that when the latter is required to go through its fermentation quickly, it will not do to have recourse to yeast from ale, in order to set it going.

1044. The chemical composition of yeast is described at page 280.

1045. **The Price of Yeast** is about 1s. 4d. per gallon, or 4d. per quart.

1046. **Sugar**, as used by the public brewers, must be in the state in which it is imported, that is to say, it must not be in any way manufactured; so that they have the choice of raw sugar or molasses. See page 289.

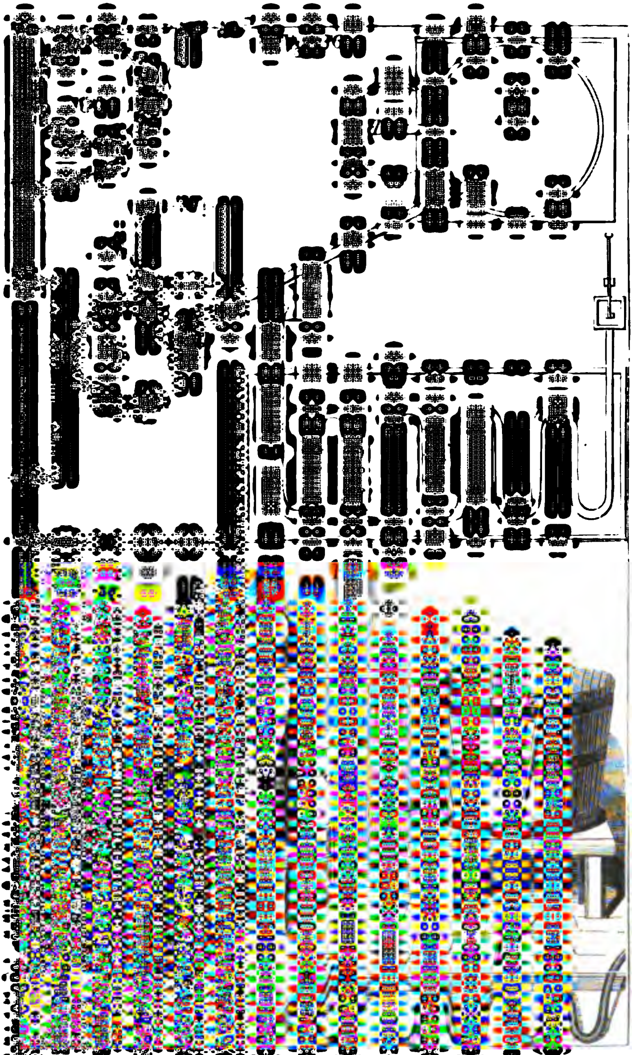
1047. **Isinglass**, as used for refining ale and porter, is of the coarsest description. See page 297.

1048. Besides the above articles, which are allowed by law, it appears, according to the evidence before the late committee of the House of Commons, that several deleterious substances are employed, as *cocculus indicus*, a very injurious and even poisonous seed; *sulphate of iron; quassia*, for its cheap bitter; and *salt*, for its specific gravity and for its tendency to produce thirst. According to Dr. Hassall's analysis, however, nothing injurious but salt was discovered in a large number of samples; though at the same time he confesses that it is exceedingly difficult to detect most of the above adulterations. The flavour of liquorice is so marked, and also so commonly met with in London porter and stout, that its absence can scarcely be credited, and it is most probable that it is included in his examination under the sugars which are allowed by law.

1049. **Brewing Utensils.**—Every brewery, whether large or small, has usually the following utensils, called *the plant*, and varied in their details according to the size of the establishment and the nature of its productions. These are—1st, *liquor and wort copper*; 2nd, the *mash-tub* or *tun*, with or without a *mashing machine*, and the *under-back*; 3rd, the *hop-back* and *wort-pump*; 4th, the *cooler*; 5th, the *fermenting tun*; 6th, the *store-vats*, *casks*, and *stillions*; and, 7th, the *thermometer* and *saccharometer*.

1050. A **Copper** for the wort, as well as for the liquor (water), is generally required, and the two are always used in large breweries, excepting where the wort and liquor are boiled by steam, introduced by means of pipes into large wooden vats, as is now often done. In private families one large copper is sometimes made to answer the purpose, but two will always be of service, holding each about a third of the number of gallons to be brewed (*figs.* 86 and 87, A).

1051. **The Mash-tub** consists of a wooden



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vessel, with a false bottom a few inches from the true bottom, and pierced with holes, to allow the wort to drain off from the grains. These holes should be bored with a hot iron, in order to prevent the water from causing the wood to swell, and thus close them up. The false bottom is fixed just above the tap, and should rest upon some projecting blocks of wood fixed against the inside of the tun, so as to be readily taken out. For private families, a sherry-butt, cut down, answers well for the purpose, with the addition of a false bottom (*figs.* 86 and 87, B). The *mashing machine* is fixed vertically in the mash-tuns of large breweries, so as by the revolutions of its arms to stir up the malt when it has the liquor poured in upon it, and thus assist in extracting all the saccharine matter. Long poles with cross-bars, called *oars*, are used instead in small breweries, or in private families (*fig.* 87, C).

1052. AN UNDER-BACK or tub to receive the wort as it comes out of the mash-tub, must always be obtained, and when the latter vessel is made from a sherry-butt, the part cut off answers this purpose well. It requires no tap, the wort being either pumped or ladled out of it (*figs.* 86 and 87, D).

1053. THE HOP-BACK is merely a strainer for keeping back the hops as the wort comes out of the copper. According to the size of the plant is the construction of this article, which for small breweries may consist of a hair sieve; for moderate ones, of a square wooden vessel, having a false bottom with holes in it; or in large breweries, of a still more enlarged apparatus, with a perforated metallic bottom.

1054. THE WORT-PUMP is only used in public breweries, and it requires to be of a somewhat different construction to the ordinary suction-pump, being intended for use in boiling liquids (*fig.* 87, E).

1055. THE COOLER is one of the most important parts of the brewing plant, since upon the proper conduct of the part of the process for which it is intended depends, in great measure, the quality of the beer. In private families good brewings are often spoilt for want of this vessel, as they are often induced to employ in its place a deep tub, which prevents the cooling process being properly carried on; and it is chiefly for want of it that brewing is seldom successful in the summer months. The wort ought, in most cases, to be rapidly cooled to 45 degrees or 50 degrees Fahrenheit; and as the temperature of the air in the summer is usually far above this heat, it cannot be effected by contact with it alone, and therefore water just raised from the well is employed by various methods. One of these, and that most usually adopted, is to force a stream of it through pipes coiled through the cooler, by which the wort is made to give out its surplus heat to the water, and thus soon to be lowered to the temperature of that fluid. Gutta percha tubes are now so readily to be obtained at 3d. or 4d. a foot, that this method may always be adopted in private families even; the one end of the tube being attached to the pump, or a vessel into which water is pumped, and the other end of the pipe after being coiled through the wort passing into some adjacent drain. Coolers, as usually made, are oblong and shallow vessels, placed at such a height from the ground that a bucket may be held beneath their tap to catch the cooled wort as it flows out, and thus convey it to the fermenting tun. When, however, a wort-pump is a part of the plant, there is no necessity for using any other method of transfer, and the coolers may be on the ground (*fig.* 86, F).

1056. THE FERMENTING TUN must be large enough to contain the whole brewing, or, if several qualities of malt liquor are brewed at the same time, there must be one for each large enough to contain them. In private families the mash-tun, with the false bottom taken out, is often employed for the purpose, or the under-back, or both together.

1057. THE STORE VATS, which are merely large casks, are, in large breweries, of enormous size, holding sometimes 100,000 gallons; besides these, smaller vats and casks are required, and others containing multiples of 36 gallons, which is the measure of a barrel of beer, for sending it out. These are made of oak, but the vats are sometimes of deal.

1058. STILLIONS are flat wooden troughs, in which the vats or barrels stand while the yeast is coming over.

1059. THE THERMOMETER is the well-known instrument for measuring heat, and it is made for the brewer in a tin case, to avoid the danger of breaking.

1060. THE SACCHAROMETER is a much more complicated instrument, but its importance is fully recognised by all large brewers. According to the quality of the malt will be the quantity of saccharine matter in the wort; and if this does not come up to the proper standard, sugar or molasses must be added, or the result will be defective. The amount of this saccharine matter in wort *made from malt alone*, may always be estimated by ascertaining its specific gravity, which is all that the saccharometer professes to do, and therefore it is no test to any one but the actual brewer, since salt, or any other substance which increases the density of the wort, will raise the saccharometer, and mislead the person relying upon it. The instrument itself is merely a hollow metal ball, attached to a weighted stem, so regulated that it shall sink in distilled water at 62 degrees Fahrenheit, to a point marked on it, and consequently, as the remainder of the stem is graduated for every degree which it rises above the wort, it will indicate a corresponding density above that of distilled water. It is not, however, much used in private brewing, nor is it necessary to produce a perfect sample of ale, if good malt is always selected. It is exactly similar in principle to the lactometer drawn in *fig* 88.

1061. **Brewing** is conducted upon certain *principles*, which, in *practice*, are modified to suit particular circumstances, as, for instance, whether *porter*, *ale*, or *small beer* is to be brewed. The first step is to heat a quantity of liquor sufficient to *mash* the malt to be brewed, at an average temperature of 170 degrees Fahrenheit. The accommodation in the copper is seldom sufficient to effect this in one bulk, and therefore the water in it is raised to the boiling point, and then reduced to the proper temperature by mixing it with cold water, and in proportion to the temperature of this last, which will be affected by the state of the weather, must the quantity of it be increased or diminished. For this purpose it is sufficient to know that one part of cold to three of boiling water is the average, in weather fit for brewing, which is not favourably conducted either in very hot or very cold seasons. For the sake of economy, the malt is generally mashed twice or thrice, so as to leave no soluble matter behind, and also to give full time for the conversion of the starch into sugar which is not completed until the access of hot water. A first mash, therefore, is usually made, with just enough water to cover the malt, and at a temperature generally of about 168 degrees, using about eight gallons of water to a bushel of malt. This quantity of water is poured into the mash-tub, and after being carefully raised or lowered to the required degree, the malt is shaken in, taking care to separate it well, so as to prevent its clotting together. When the malt and water are thoroughly stirred together, the temperature ought to be again taken; and if it is below 150 degrees Fahrenheit, the next mash must be raised two or three degrees accordingly. The whole is now to be covered over with sacks, so as to keep in the heat as much as possible, and should thus remain for about one hour and a half, or rather less in very cold weather. As soon as the brewer has covered his mash-tub, he begins to charge his copper again for the next mash, having a full hour for the purpose. At the end of the time above-named, the brewer having a sufficient quantity of hot water ready for the next mash, proceeds to draw off the first by turning the tap in the mash-tun to run in a small stream, and carefully returning to the grains a gallon or so till it runs fine. This first mash seldom runs off more than half the quantity of wort which was added as liquor, and if the brewing is to be all "one way," or "entire," more liquor is at once added before all of this has run off; but when, as in many private families, two kinds of beer are to be brewed, the wort from each mash must be kept apart. But as the above proportion of malt to liquor would turn out the ale of a very strong nature indeed, it is usual to "sparge" the grains during the time that the first wort is running off, until a sufficient quantity has been collected. Thus, supposing it is intended to brew ale of 10 bushels of malt to the 54 gallons, then, as the 10 bushels have been mashed in 80 gallons of liquor, and as half this will be retained by the grains, 24 gallons more of hot liquor must be poured on the malt before the 54 gallons will make their appearance in the under-back; and as the liquor would run through the malt if poured on carelessly from a bucket, it is usual to pour it on from a watering-pot, or some similar vessel, so as to ensure its thoroughly washing it as it passes through. This is called "sparging," and is of consequence in economical brewing. The liquor should be somewhat hotter than for mashing, say from 160 to 185 degrees, according to the weather. As soon as the under-back has received its quantity, as already calculated, the tap is closed, and the brewer proceeds to effect his second mash, using the liquor at a temperature of about 175 degrees, and admitting to the mash-tub as many gallons as he intends to draw off; or if he purposes a third mash, then dividing the whole into two quantities, and mixing them together as they run into the under-back. It will be understood that as soon as the whole quantity required for the strong ale is collected in the under-back, it must be removed to the wort-copper, so as to leave it ready for the wort from the second mash. It is well known among brewers that the wort from the several mashes gradually changes its character, being at first rich in saccharine matter, with a small proportion of mucilage, gum, &c.; afterwards the sugar diminishes, and the latter ingredients increase in quantity, so that the wort is not only weaker and of less specific gravity altogether, but it is also much less sweet, and being more mucilaginous, it is more liable to run on to acetous fermentation. Many brewers therefore, after drawing off their ale, add a proportion of sugar to brew their table-beer, using from one to two pounds to eighteen gallons, according to the weakness or strength of the wort in point of saccharine matter. When the brewing is confined to one quality only the process is the same, except that the whole quantity is run through the malt and mixed together before boiling or hopping. The malt, when thus mashed and exhausted of its soluble matter, receives the name of "grains."

1062. For Boiling and Hopping the Wort, a second copper is required, as already mentioned in par. 1050, unless the brewing is limited to a small quantity, and that of one kind of beer only. The reason for this is that the wort should be boiled as soon as possible, after it is received in the under-back; and as the liquor-copper is required to heat the water for the second mash, it cannot be used for boiling the wort till the whole of the mashing is finished. If this precaution is neglected, the wort remaining too long in the under-back is apt to turn sour, or to become "foxy," as it is called. The wort, therefore, is at once ladled or pumped into the copper; and after being well mixed with the hops, it must be raised to the boiling point as soon as possible, when the fire must be raked or regulated so as to keep it at a *low* boiling temperature for the proper time. The Quantity of Hops per bushel of malt varies according to the taste of the neighbourhood, the strength of the ale or beer, and the age of the hops. For strong ale intended to be kept, a pound a bushel is about the average, and for table-ale, from half a pound to three-quarters, the latter quantity being required when the brewing is at or near the summer time, or where a bitter beer is preferred. When what is called "bitter-beer" is required, nearly double the above quantity of hops must be used; and if they are of the Worcester growth, the flavour will still more nearly approach the original Burton. The Proper Time for the boiling to be maintained may be known by the wort "breaking up" into flakes, that is, the mass of fluid, which at first is uniformly dense in appearance, becomes converted into a flaky liquid, part bright, and the remainder in small flattened granules; and when this is the case, the boiling is carried far enough, and the wort must be strained from the hops into *the cooler*. The first wort requires much less boiling than the second, the average being generally about an hour and a half, while for the second mash two hours or two and a half will not often be too long, and for a third three hours, at least, must be the period adopted. The hops, when strained, are returned into the copper for the next boiling, as some little soluble matter still remains; but to these a second quantity must be added for the boiling of the second mash. As the hops are not squeezed, they retain a certain amount of wort, which will amount to about two quarts to each pound of hops, and which must be allowed for in the brewing, as well as for the loss by evaporation. When the wort is intended to be boiled for more than one hour, it is better not to add all the hops until within an hour of the time when it is to be cooled, as the aroma is, to a certain extent, lost in boiling. The wort is next strained into the under-back or direct into the cooler through the hop-back, or common strainer, as the case may be.

1063. Cooling the Wort should be conducted with as much speed as possible, and hence it should not be more than three or four inches deep in the cooler, except in very cold weather. When a refrigerator is used, it must not be set in action until the wort is somewhat reduced in temperature; but as soon as it has fallen to about 140 degrees, begin and cool it as quickly as can be effected by these means until the wort is down to about 60 degrees, after which it is at once removed to the fermenting tun.

1064. Fermentation, or "pitching the tun," as the brewer's slang terms this process, is the part in which the greatest experience is required; for though the rapid cooling is quite as necessary, yet it is so easily managed when the proper means are used, that any one of ordinary capacity may readily cool his wort, if he has the necessary apparatus and premises. In fermentation, however, much more nicety is required, and many things must be taken into the calculation, as the quantity and quality of the yeast, the heat of the apartment, and the kind of beer to be produced. The principal points which affect this process are—1st. *The weather*, including the electrical state of the atmosphere, which influences the fermentation, producing a tendency to acetic fermentation, when there is disturbance in the equilibrium, as evidenced by what is called "thundery weather." Warm weather has a similar effect in accelerating fermentation, while very cold weather retards it.—2nd. *The nature of the yeast*, which should be obtained from a good and successful brewing, and from beer of a similar quality to that to be fermented.—3rd. *The proper conduct of the mashes;* for if the liquor has been used at too low a temperature, fermentation must be carried on with care, or the wort will be impoverished, while if the heat has been too great it must be effectually cleared by

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at hand; then the last thing at night light the fire, and damp it when well down, so that by the early morning the copperful of liquor may be hot, ready for the first mash, or nearly so.

1067. Table-Ale or Beer is generally brewed from the second mash of strong ale; but when this is not the case, it requires about four or five bushels of malt, and from 4 lb. to 7 lb. of hops, to fifty-four gallons of water. Very small, or harvest beer, is sometimes brewed with two or three bushels of malt and 4 lb. of hops, but this will not keep more than a week or ten days. Pale malt is the best for this beer, unless a high colour is required.

1068. Strong Ale is brewed from eight to ten bushels of malt, and 8 lb. or 10 lb. of hops. Pale malt, here, again, is the best; but this is a matter of taste depending upon the colour preferred.

1069. Bitter Ale is generally brewed from very pale malt, the quantity of which is from four to five bushels, and of hops 8 lb. to the hogshead.

1070. A Hogshead of Stout is brewed from one quarter of pale malt, two bushels of brown malt, and three-quarters of a bushel of black or patent malt mixed together, and hopped with 8 lb. of hops.

1071. Porter is often the second mashing of malt for stout, with the addition of treacle. Thus, from the above brewing of stout, with the addition of 18 lb. of treacle, thirty-six gallons of porter may be brewed. Or, if porter is to be brewed at once from the malt, then called "entire," half the quantity ordered for stout will be required. Extract of liquorice is said to be used instead of treacle, and certainly the taste of porter bears out the popular belief, but it has not been detected in it by microscopical examination.

1072. Cellaring, Fining, &c.—The cellar for keeping beer should not be too cold or too hot, but should be preserved as near as possible at 55 degrees Fahrenheit. A close cellar, also, like one fit for wines, is not adapted for beer. The vent-pegs should be carefully watched, and should be closed as soon as the fermentation will allow. When beer is required to be used before it has become fine in the natural course of events, or when it refuses to do so, isinglass in some form is had recourse to in order to effect this object, and the mixture so used is called "finings." In ordinary cases, one ounce to a barrel is the proper quantity of isinglass; and to use it, dissolve it in a little fine beer, not sour, until the whole is of the consistence of treacle, when it should be strained by twisting it in a piece of canvas, after which it may be reduced in a little more beer until it forms a liquid of the consistence of cream, when it is fit for use. For this purpose draw out a pail of the beer to be fined, and add the finings in quantity proportioned to its cloudiness, an ounce to the barrel being the *average*. Whisk the whole in the pail until a head is produced, when it may be poured into the bunghole, first of all making room for it by taking out another pailful. The whole contents of the barrel are then to be well stirred up, and the last-drawn pail restored, when the bung may be replaced as soon as the bubbles caused by the stirring are gone down. In a few days, or a week or more, according to the kind of ale, try whether it is bright, and if not, a longer period must be given it. When very stubborn, some other substance is to be tried, as *salt*, *alum*, or *quick-lime*. Half a pound of the first, or two ounces of the two last, are the quantities for a hogshead of beer. *Ropiness* arises from defective fermentation, and the best remedy is a fresh supply of yeast and a second fermentation, adding a little wheat-flour at the same time.

1073. Beer is Racked from large casks into small, in order that it may remain good while on draught. But whenever a large cask is tapped for this purpose, it should be emptied entirely, or the air getting into the upper part will make its contents flat. A small quantity of hop should be added to each cask, and these should be quite clean, and, if possible, fresh from their last using. When, in draught, beer becomes flat and stale, a little new beer added will be the best remedy; or some wheat-flour may be made up into a paste with syrup or treacle, and dropped into the cask, which will sometimes recover beer only slightly gone off.

1074. Malt Liquors of all kinds are much improved in flavour and briskness by bottling, if this plan is adopted at the proper time. Very often when a barrel of any kind of this beverage is almost sour, it is made up with a little additional sugar, and bottled with the expectation that it will turn out well. But the fact is that it ought not *quite* to have completed its fermentation when it is bottled, or at all events its saccharine matter should still be unconverted into alcohol or vinegar. Beer should never be bottled while there is any tendency to spirt from the vent-peg, but as soon as this has ceased, and it is fine, it may be bottled with advantage. If there is any doubt about its being fit, the corks may be left out for a day or two, and on being driven in they will generally require the aid of a string or wire to keep them down, and then with a strong bottle there is every chance of avoiding a failure from either extreme. When beer is somewhat too flat, a tea-spoonful of sugar, or a raisin or two, or a few grains of rice, will afford new *pabulum* for fermentation, and set the carbonic acid free, as is desired for this purpose.

1075. MALT LIQUORS are brewed on the most extensive scale in London, as well as the provinces, by large brewers, one or two of whom in London consume more than one hundred thousand quarters of malt per year. These large firms brew a genuine article, and sell it to the landlords of the numerous public-houses who patronise them, either voluntarily or from compulsion. In London the licensed victuallers number about 4500, and the beer-houses more than 2000, or together nearly 7000 houses; being about 1 to every 45 houses, and 1 to every 350 inhabitants. It is, therefore, highly important that the beverages supplied by them should be good; and though they are loudly accused of adulteration, yet the charge has not been so clearly established as to make it an undoubted fact.

1076. THE ADULTERATION OF MALT LIQUOR has been most carefully examined by a committee of the House of Commons, and since then by Dr. Hassall, who first had his attention called to the bitter beer of the Burton breweries, which was said to be adulterated with strychnine, in order to obtain a cheap bitter. This has been most completely disproved by several high chemical authorities, and also by Dr. Hassall, at the instigation of the *Lancet*, all coming to the conclusion that the bitter ale of Messrs. Bass & Co. and Allsop & Co. is a pure and wholesome beverage, concocted from malt, hops, and water alone. With regard to stout and porter, several seizures of illegal articles to "make up" quantities of them have been made by the Excise, consisting of cocculus indicus, Spanish juice, grains of paradise, copperas, quassia, &c., so that it has been indisputably proved that the attempt has been made to use these noxious articles in the trade. It is well-known that publicans are very careful how they allow their customers to invade their underground territories in the morning, when the porter, &c., for the next day is preparing; but this is not necessarily a proof of guilt, but rather may be caused by a desire to be free from interruption. Nevertheless, they are universally charged with these tricks, and by general consent it is supposed that something or other is done in the cellar which will not bear the light of day. Dr. Hassall, however, was unable to detect any adulteration in porter or stout, except with water, which is a venial offence, comparatively, and, in addition, a certain portion of salt, which, also, is only intended to increase the thirst of the customers, as well as to raise the density of the porter. Acidity of an acetic kind was also detected, to a great extent. As far, therefore, as the *Lancet* Commission is concerned, the London publicans and brewers come out with tolerably clean hands; and, with regard to bitter beer, have absolutely gained a character which they had not before.

1077. THE RETAIL PRICES of good sound malt liquors in London are now on the average as follows, some of the most celebrated brewers demanding a somewhat higher rate than the rest:—

CASH PRICES PER FIRKIN OF NINE GALLONS.
July 5th, 1856.

	s.	d.
XXX	15	0
XX	12	0
X	9	0
A	7	6
Stout	11	6
Porter	9	0
Table-beer	5	0
Pale India ale (bitter ale) ...	12	0
Ditto (Allsop's or Bass's) ...	16	6
Ditto, bottled ... per doz.	4	6
Barclay's stout, bottled „	3	6

1078. ALE MEASURE is as follows:—

9 gallons make a firkin.
18 „ „ kilderkin.
36 „ „ barrel.
54 „ „ hogshead.
108 „ „ butt.

SUB-SECT. B.—CIDER AND PERRY.

1079. CIDER AND PERRY are the fermented juices of apples and pears respectively, each being treated exactly in the same way.

1080. THE FRUIT must be of a very different quality from those intended for the table, which are luscious, and almost entirely devoid of the astringent properties which are required for keeping the juices of those intended for cider and perry. This astringency is mainly due to the tannin contained in the fruit, which leaves a most unpleasant sense of roughness on the palate. It is very difficult to make these two drinks from sweet fruit, and almost impossible without an admixture with some of those containing the astringent principle, though some makers, even with the former, contrive by careful and often-repeated racking to stop the acetic fermentation, and keep the saccharine matter in its original state.

1081. BOTH APPLES AND PEARS consist of malic acid, mucilage, grape-sugar, tannin, an essential oil and bitter principle in the seeds, and water.

1082. THE CONVERSION INTO PULP is the first part of the process, which in the old methods was a very long one, and with the aid of a very clumsy stone-mill worked by a horse, extended over a long period of time, seldom being completed before Christmas, during which time half the apples became rotten. At present, as soon as they are gathered, or within a few days after, a portable machine is hired by the grower and worked by its owner at so much per hogshead; most of them being able to grind and press eight or ten hogsheads a day of 100 gallons each, or a proportionate number of those containing fifty-four gallons. In the Worcester and Hereford districts, the former measure is adopted, while in the Western counties the ordinary beer measure of fifty-four gallons is the hogshead employed. These machines tear and grind the apples to pieces either with the aid of horse-power—requiring three or four horses, or by steam, the last being seldom employed. The mill is of steel, and acts not by mere pressure, as in the old stone-mill, but by the ordinary action of grinding. The pulp thus prepared is at once pressed, being placed, as in the old press, in horse-hair bags, and then squeezed by hand-labour, the juice running out being in the condition of new cider, ready to be at once moved down into the cellar. After all the apples are ground and pressed, the pulp is mixed with water, re-ground and re-pressed, and makes about a tenth of the original quantity of a liquid which is called "water cider," and which must be soon drunk, because it will not keep, though sweet and agreeable to the palate for a short time.

1083. THE NEW CIDER, on being stored, soon begins to ferment, seldom requiring any aid for that purpose, as in the case of malt-liquor. Sometimes, however, when it refuses to work, a little yeast, say about a pint, is stirred into a hogshead of cider, and that very seldom fails to set it going. Generally, in twenty-four hours, a scum begins to rise, which should be carefully removed as fast as it makes its appearance. The cider is either temporarily left to ferment in large vessels set on end with their heads out, or else it is at once poured into the casks where it is to remain, according to the peculiar methods practised in different localities. If the large upright casks are used, the cider is only allowed to remain in them for 36 or 48 hours, when, if the fermentation has caused the cider to throw down a considerable amount of its mucilage in the shape of flocculent matter, it is at once racked into the store-casks, and there the fermentation is allowed to progress to a certain point, which varies greatly with the particular kind of fruit, and which can therefore scarcely be described. The bungholes are kept filled up with cider of corresponding age and quality, and thus the working froth is caused to flow over every time the new fluid is added. After a certain time, when the fermentation is considered to have proceeded far enough, the cider is racked again into another cask, which stops the fermentation for an uncertain period, and on its again reappearing, recourse is had to a third or fourth, or even a fifth racking. So careful are some of the best cider-makers to catch the exact moment when this new attempt at fermentation shows itself, that they will sometimes sit up all night rather than allow the proper moment to slip by without taking advantage of it. Some growers boil their cider for the purpose of stopping the fermentation, others use the fumes of sulphur for the same purpose; but the best sweet cider, which is always that in which the process has been stopped, is generally made by attending carefully to the racking-process.

1084. CIDER, if well made, and of good fruit, should not require any "fining;" but if it refuses to clear itself, isinglass or white of eggs may be mixed with it, exactly as for beer (see par. 1072).

1085. Cider and perry are bottled; they are brisk and full of carbonic acid gas, and often greatly admired as a substitute even for champagne. No precaution is necessary, but to bottle the one or the other in strong bottles with good corks, and not to delay it too long, though at the same time it is necessary to avoid attempting to confine either cider or perry before the fermentative process is settled, or the strongest bottles will be burst.

1086. THE QUALITY of both cider and perry varies very considerably, there being every grade, from sweet to sweet-and-rough, rough-without-sweet, and rough-and-acid descriptions. Much of this is due to the soil, for some soils will not produce any thing but rough and sour perry and cider. Still more, in general, depends upon the manufacture; and the careful grower will often, by a few hours' attention per week, double the value of his stock.

1087. CIDER is sold at from 6d. to 1s. 6d. per gallon, and perry at from 10d. to 3s., or even 4s., for the same quantity. Both of these drinks are always sold by the gallon, although the hogshead is often mentioned as the measure employed. The alcoholic strength is greater than is supposed, some of the common rough sorts being capable of affecting the head very rapidly. From the quantity of acid in general contained in cider and perry, they are seldom found to agree with the stomachs of those who have not been early accustomed to their use; but in the fruit-districts they agree well with most people, and do not disorder the stomach and head when taken to excess to the same extent as malt liquor.

SUB-SECT. C.—WINES AND SPIRITS.

1088. **WINE** is generally defined to be the fermented juice of the grape, and this description is sufficient for all foreign wines; but there are also some of British growth or manufacture which have nothing to do with that fruit, but are the result of the fermentation of some other saccharine matter, as, for instance, currant and gooseberry-wine, elderberry-wine, ginger-wine, rhubarb-wine, malt-wine, &c. The above definition must, therefore, be confined to *foreign* wines.

1089. It is contended by the advocates of total abstinence from alcoholic drinks, that wine, or the fermented juice of the grape, is a modern invention, unsanctioned by Scripture, and unnecessary to man; but this hypothesis is utterly untenable; and though it would take some space to refute it, yet there is no doubt that it is capable of as complete a contradiction as is the assertion, that black is white or white black. Indeed, as they do not deny that the juice of the grape in some shape was used, they almost admit the fact, because it is well known that new and old wine were both recognised by the Romans and also by Christ himself; and, therefore, if *old*, it must have been fermented, because in wine this process takes place without any adventitious aid. Supposing, therefore, that the wine mentioned in Scripture was fermented, we have full authority for its use, though of course there is none for its abuse.

1090. **THE VINE** does not thrive except between the latitudes 35 and 50 degrees, though north of this it will sometimes ripen, but the produce is a poor apology for the grape, and when its juice is converted into wine it is weak, and readily changes into vinegar. The grapes are yielded in considerable abundance, and at the proper season are removed from the vine, either by the hand or some cutting instrument. In most of the wine-growing countries three separate gatherings or vintages are made: the *first* of which includes all the finest and ripest bunches, from which the rotten or imperfect berries are carefully removed; a *second* gathering is composed of the next best bunches; whilst the *third* is made up of the refuse of the two first. The gathered bunches are deposited as lightly as possible to avoid bruising, and the damaged portions set aside. In order to effect the gathering without injury the labourers use a kind of osier basket, which is conveyed on the head or on the back of a horse. In some cases the grapes are removed from the bunches, and in others these last are pressed whole, as the astringent principle contained in the stems is considered beneficial, and there is no doubt that it aids in keeping the wine. Grapes for white wines are rarely removed from the stalks. The next operation consists in the *pressing*, which is managed variously in different countries, some of them being still addicted to the use of the most rude methods, as, for instance, the mere weight of the human body, which is the prevailing method in some parts of France. In other parts a wine-press is employed, but for making red-wine the treading is essential in order to disengage the colouring-matter from the skins, though there can be no objection to the subsequent use of the press. The only species of wine made from the grape without mechanical pressure other than its own weight is that called *lagrima*, which flows from the grapes as they are suspended in bunches; but this can only be made from the muscatel grape. The juice thus obtained, either by treading or pressing, or in the way used for *lagrima*, is called *must*, and is turbid, with a sweet and agreeable taste, and a laxative effect on the human system.

1091. **WHEN MUST** is put into a suitable vessel, at a temperature of 55 to 60 degrees Fahrenheit, a gradual fermentation ensues as a natural consequence of the presence of vegetable albumen in the grape; bubbles of carbonic acid gas are evolved, and rise to the surface, bringing with them much of the refuse or dregs, which accumulate into a thick, spongy, and firm crust, covering the whole liquor. After a certain time the crust breaks into fragments and falls to the bottom, which is a sign that the fermentation has proceeded far enough, and it is therefore checked by racking into casks and bunging them carefully, after removing them into a cool cellar. The effects of fermentation are similar to those produced in malt-liquor, described at page 321; much of the saccharine matter is converted into alcohol, and the remainder is pleasant to the palate, with just enough sweetness to be agreeable. It is mainly upon the degree to which fermentation is carried that the flavour of the wine depends, though the kind of grape and the nature of the soil and climate have also their proportionate effects. From the development of alcohol, the effect upon the brain—in occasioning excitement and, in large quantities, drunkenness—is produced, by which all spirituous liquors are distinguished; while there can be no doubt that any quantity of must, or unfermented wine, may be swallowed with perfect impunity, as far as intoxication is concerned. But even after the wine is stored in the casks a slow fermentation still goes on, by which the mucilaginous particles and the tannin and woody matter, as well as the tartar, are thrown down in the shape of what is called *lees*. In this slow change the taste of the wine becomes more refined, and the harshness disappears, which was due to the presence in solution or suspension of the above ingredients. But if the first fermentation has not been fully performed, the second is also interfered with, and the wine continues turbid, emits bubbles, and sometimes breaks the containing vessel, as in the sparkling wines, in which this is purposely effected, but with great care, to avoid over-doing it. If, on the other hand, the first fermentation has been carried too far, the wine is liable to run on to the acetous fermentation, which is very slow and insensible, but surely begins as soon as the alcoholic stage is concluded, if not checked by artificial means. Acetic acid once formed cannot be altered into any other useful product, and the wine-grower is compelled to conceal its presence by converting it into a neutral salt, adding for that purpose an alkali or alkaline earth, or, in some cases, lead, which unites with acetic acid to form the acetate of that metal, a salt which has a *sweet* taste, not disagreeable to the palate, and without much effect upon the colouring matter of the wine, while at the same time it retards fermentation and putrefaction. Hence, its use has always been adopted by those who either are ignorant of its baneful effects upon the human system, or are reckless of the consequences. The alkalies, on the other hand, destroy the red colour of wine, changing it to a dark olive, and producing a disagreeable effect upon the flavour, so that they are never adopted except with the white wines.

1092. SULPHURING AND FINING are further processes which are had recourse to in wine-making; the former being intended to stop the fermentation, and the second to remove the turbidity. Sulphur is chiefly applied in the form of the sulphurous acid given off in its combustion, and the process consists in burning a sulphur match in the bunghole of the cask, or in mixing sulphurous acid gas with some must, and stirring this into the wine. The finings used are white of eggs, isinglass, and gum-arabic, the last being preferred on account of its not being liable to putrefaction.

1093. WINES ARE ALWAYS MEDICATED, more or less, for every market, or they would otherwise be reduced to a few leading varieties, so as to interfere in a great measure with the existing profitable trade. Much of this part of the art of wine-making is effected by mixing various wines together, at the time when they make a second attempt at fermentation, which is called "bearing the fret," and the operation, "fretting in." When wines are mixed, they always have a tendency to ferment again, and the compound is never complete till this is settled and over. Some kinds of grapes are only cultivated for the purpose of making a wine suited to flavour others of insufficient character, and which is kept solely for that purpose. Brandy is very generally used, especially for the English market; and besides these aids, several other ingredients are employed for imparting flavour, as bitter almonds, orris root, wormwood, rose-water, &c.; while in order to raise the colour, burnt sugar, certain berries, and oak chips, as well as logwood, are brought into requisition.

1094. WINES ARE RED when the black grape with its skin has been employed in their manufacture. The white grape makes a light yellowish-brown wine, and the black grape, freed from its skin, one of a similar colour but rather darker. The first great sub-division is therefore into *red* and *white*. Another, entirely independent of the first, is into *astringent* or *dry wines*, including Hock, Claret, Bucellas, Moselle, Burgundy, Champagne, Sherry, and Madeira; and *sweet wines*, as Malaga, Lisbon, &c., which contain a large proportion of sugar unconverted into alcohol. Lastly, some of the dry wines are checked in their fermentation and bottled, so as to be used in a *sparkling* or *foaming* condition, which however is not necessarily attending upon any one kind, Champagne, Burgundy, Moselle, &c., being all sold either in the sparkling or still condition.

1095. THE CHEMICAL CONSTITUENTS OF WINE are nearly as follows, the proportions varying in different vintages and qualities, and according to the age of the samples examined—viz., water, alcohol, mucilage, colouring matter, supertartrate of potash (or tartar), tartrate of lime, acetic acid, and in some cases, when sparkling, carbonic acid. In addition to these, most wines possess a peculiar volatile principle which has never been isolated, and upon which the peculiar flavour or *bouquet* of the wine depends. The quantity of alcohol in different wines varies considerably, and, according to the analysis of Brande and Henderson, in the proportions set down in the annexed list, to which are added, for the sake of reference, malt liquors and spirits. Many of them contain brandy, added solely for the British consumer:—

Per Centage of Alcohol contained in—

Scotch whisky	54.32
Irish, ditto	53.90
Brandy	53.39
Rum	53.68
Gin	51.60
Marsala	25.09
Ditto, weaker	18.40
Port	23.39
Madeira	22.27
Sherry	19.17
Teneriffe	19.79
Lachryma Christi	19.70
Constantia	19.75
Ditto, red	18.92
Lisbon	18.94
Cape muscat	18.25
Roussillon	18.13
Malaga	17.26
Hermitage	17.43
Malmsey Madeira	16.40
Claret, full	15.10
Ditto, thin	12.91
Sauterne	14.22
Constantia	14.50
Burgundy	14.57
Champagne, still	13.80
Ditto, sparkling	12.61
Hermitage, red	12.32
Vin de grave	13.37
Frontignac	12.89
Rhenish wines, average	12.08
Ditto, weak	7.36
Johannisberg	8.71
Rudesheimer, 1811	10.72
Ditto, 1800	12.22
Gooseberry wine	11.84
Cider, highest average	9.87
Ditto, lowest	5.21
Mead	7.32
Ale	6.87
Stout	6.80
Porter	4.20
Small-beer	1.28

1096. The Effect of Wines upon Man depends partly upon the alcohol which they contain, but partly also upon other matters, as, for instance, the astringent wines, which act not only as stimulants, but as tonics, in virtue of the extractive matter suspended in them; and, again, the sparkling wines act more rapidly upon the brain in consequence of the carbonic acid gas which they contain; besides which, the peculiar acids which are developed in them have a slight diuretic effect, totally different from port-wine, which has an opposite tendency. According to Henderson, who is still received as the best authority on the subject, and in whose conclusions on these points I most fully concur, the following are the peculiarities in the effects of the different kinds of wine:—"1. Among the brisk wines, *champagne* may be considered the best, and is the least noxious, even when drunk in considerable quantity. The wines of Champagne intoxicate speedily, probably in consequence of the carbonic acid in which they abound, and the volatile state in which their alcohol is held; and the excitement is of a more lively and agreeable character and shorter duration than that which is caused by any other species of wine, and the subsequent exhaustion less. Hence, the moderate use of such wines has been found occasionally to assist the cure of hypochondriacal affections and other nervous diseases, where the application of an active and diffusible stimulus was indicated. The opinion which prevails that they are apt to occasion the gout, seems to be contradicted by the infrequency of that disorder in the province where they are made; but they are generally admitted to be prejudicial to those habits in which that disorder is already formed, especially if it has originated from addiction to stronger liquors. With respect to this class of wines, however, it is to be observed, that they are drunk too often in a raw state, when, of course, they must prove least wholesome; also, in consequence of the want of proper cellars, and other causes which accelerate their consumption, they are very rarely kept long enough to attain their perfect maturity. It is also worthy of notice, that in order to preserve their sweetness and promote effervescence, the manufacturers of champagne commonly add to each bottle a portion of syrup, composed of sugar-candy and cream of tartar, the highly-frothing kinds receiving the largest quantity. Therefore, contrary to the prevailing opinion, "when the wine sparkleth in the glass, and moveth itself aright," it is most to be avoided, unless the attributes of age should countervail all its noxious properties.—2. The red wines of *Burgundy* are distinguished by greater spirituosity, and a powerful aroma. Owing, perhaps, to the predominance of the latter principle, they are much more heating than many other wines which contain a larger proportion of alcohol. The exhilaration, however, which they cause is more innocent than that resulting from the use of heavier wines. The better sorts may be sometimes administered with advantage, in disorders in which stimulant and subastringent tonics are required. The same observation will apply to the wines of the Rhone, and the lighter red wines of Spain and Portugal.—3. Possessing less aroma and spirit, but more astringency than the produce of the

Burgundy vineyards, the growths of the *Bordelais* are perhaps, of all kinds, the safest for daily use, as they rank among the most perfect light wines, and do not excite intoxication so readily as most others. They have, indeed, been condemned by some writers as productive of gout, but I apprehend, without much reason. That with those people who are in the practice of soaking large quantities of port and Madeira, an occasional debauch in claret may bring on a gouty paroxysm, is very possible; but the effect is to be ascribed chiefly to the transition from a strong brandied wine, to a lighter beverage, a transition almost always followed by a greater or less derangement of the digestive organs. Besides, we must recollect that the liquor which passes under the denomination of claret, is generally a compound wine. It is, therefore, unfair to impute to the wines of the Bordelais those mischiefs, which, if they do arise in the manner alleged, are probably, in most instances, occasioned by the admixture of other vintages of less wholesome quality. The wines of *Oporto*, which abound in the astringent principle, and derive additional potency from the brandy added to them previously to exportation (especially those intended for the British market), may be serviceable in disorders of the alimentary canal, where gentle tonics are required. But the gallic acid renders them unfit for weak stomachs, and what astringent virtues they show will be found in greater proportion in the wines of Alicant and Rota, which contain more tannin and less acid; the excitement they induce is of a more sluggish nature than that attending the use of the purer French wines, and does not enliven the fancy in the same degree. As a frequent beverage, they are unquestionably much more pernicious.—5. For a long time the vintages of *Spain*, and particularly the sacks, properly so called, were preferred to all others for medicinal purposes. The wines of Xeres (sherry) still recommend themselves by the almost total absence of acidity.—6. Of all the strong wines, those of *Madeira*, when of good quality, seem the best adapted to invalids, being equally spirituous as sherry, but possessing a more delicate flavour and aroma, and though often slightly acidulous, agreeing better with dyspeptic habits. Some have thought them beneficial in cases of atonic gout, probably without much cause; for whenever a disposition to inflammatory disorders exists, the utility of any sort of fermented liquors is very doubtful.—7. The light wines of the *Rhine* and those of the *Moselle* are much more refrigerant than any of the preceding, and are frequently prescribed in the countries where they grow with a view to their diuretic properties. In certain species of fever, accompanied by a low pulse and great nervous exhaustion, they have been found to possess considerable efficacy and may be given with more safety than most other kinds, as the proportion of alcohol in them is small, and its effects moderated by the presence of free acids. They are also said to be of service in diminishing obesity.—8. It is difficult to conjecture on what circumstances the ancients founded their belief in the innocuous qualities of *sweet wines*, contrasted with the drier and more fully fermented kinds. They may not intoxicate so speedily, and as they clog sooner upon the palate, are perhaps generally drunk in greater moderation. When new they are exceedingly apt to disorder the stomach; and when used too freely, produce the same effects as the heavier dry wines. In their more perfect state they may answer the purpose of agreeable and useful cordials; but as the excess of saccharine matter retards their stimulant operation, they ought always be taken in small quantities at a time."

1097. THE VARIOUS WINES of Spain, Portugal, France, Germany, &c., are imported into this country chiefly in wood; but some of them, as the best qualities of the German and French wines, in bottle only, being packed in cases containing generally three dozen bottles each. The bottled wines are in most cases fit for consumption after two or three months' rest to recover the agitation caused by travelling, in which state they are said to be "sick." Wines in wood must be frequently kept for a considerable time, in order to deposit all the woody and mucilaginous matter, which is never afterwards completely thrown down if the wine is bottled too soon. The pipe or butt is therefore removed to a good cellar, which should be free from the jar of heavy traffic, and also of an even temperature, as near as possible to 50 degrees Fahrenheit. Here it may rest for three or four months, when a spile is to be inserted, and a sample tasted, by the state of which the purchaser is guided as to the propriety of bottling it at once, or of waiting for a further deposit of the objectionable matters. Wine should always be bottled before it has lost all the sweetness which it possesses, and the owner should not wait for it to acquire the exact amount of dryness which he expects it to have when bottled and fit for use. If he waits thus long he will find that instead of having a wine dry enough for his palate, it will be too thin, and perhaps acid, and will, in fact, be ruined for ever. The exact degree of richness and fruitiness therefore required are only to

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Claret, St. Julien		30	0
Ditto, St. Esteppe		36	0
Ditto, la rose		42	0
Ditto, Leoville and Latour	48s. and	54	0
Ditto, Margaux		60	0
Ditto, Lafitte		72	0
Sauterne		48	0
Hock and Moselle	36s. and	48	0
Ditto, sparkling	60s. 72s. and	84	0
Rudesheimer, Steinberger, Johannesberger, and Leibfraumiter		60	0
Sparkling champagne	48s. 60s. and	72	0
Old pale Cognac brandy		66	0
British brandy		22	6
Rum		00	0
Whisky		36	0
Gin	25s. to	27	0
Proof spirit, per gal.	11s. to	12	0

1100. THE DUTY on foreign wine is 5s. 6d. per gallon, and 5 per cent. in addition, which will make it as near as need be 1s. per bottle, of six to the gallon. Cape wine, being of British growth, pays only 2s. 9d. per gallon, plus 5 per cent.

1101. FOREIGN WINES are chiefly imported into London, but Gloucester, Bristol, and Liverpool also transact a small share of this trade. The London and St. Katharine's Docks are the chief seats of the bonded warehouses, where the wines are stored until they pay the duty imposed by the excise laws. The wine being consigned from Oporto, Cadiz, or any other port, is unloaded from the ship in which it has come over in one or other of the docks, and is then conveyed on a tramway at once to the vaults beneath the warehouse, where it is left to be examined and tasted. For this purpose the importers, or their agents, give a "tasting order" to any person who is likely to be a customer, which requires the wine-coopers attached to the particular vault where the wine lies, to draw a sample or samples for trial. When this order is given by a large owner or broker, the possessor of it may easily go on tasting until he loses all perception of the difference between sherry and port. In the East Vault of the London Docks there is an area of twelve acres of wine, and often the order extends to a large portion of this enormous extent of fermented liquors. The order is first presented at the counting-house, where it is examined and ratified, and its holder is then placed under the care of a cooper, who proceeds to conduct him below. A gimlet and a glass, with a peg to close the hole, constitute the simple apparatus for effecting "the taste," and one after the other each cask is tapped till the taster is satisfied. Each cask has a particular "brand," so that when he fixes upon the object of his choice, he has only to note the brand, and there is no difficulty in identifying it. The fumes of alcohol are so strong in these vaults, that, even without swallowing any wine, the head is often turned after remaining in them for a short time. It is usual among large purchasers and tasters to avoid swallowing any wine, and to confine the taste to a roll of the fluid round the mouth; finishing by ejecting it. This is done in an artistic way by the true connoisseur, which the uninitiated will in vain attempt to imitate.

1102. HOME-MADE WINES being chiefly of domestic manufacture, will be better described in the next chapter. Many of them are, however, now made on the wholesale scale, and also imitations of port and sherry for the use of small country public-houses, and even private families; but the imitations are very poor in flavour, and exceedingly unwholesome; nevertheless, the name occasions them to be sought after, and passed off, perhaps, as the genuine article, upon those who do not know better. Some kinds, as ginger, rhubarb, or raisin wine, are sold of a very superior character; but the majority are not to be compared with the average run of the real home-made wines met with throughout the kingdom.

1103. LIQUEURS are now extensively introduced into use among those who indulge in dinner parties to any extent. They are intermediate between the foreign sweet wines and spirits, and are made with a foundation of some fermented spirit, as rum, gin, whisky, or brandy, mixed with certain flavouring matter, such as pine-apple, peach-kernels, &c. Every year, and almost every month, some new variety is brought out, and is introduced after dinner as a desirable means of digesting it; but the reverse is really the case—the dinner in fact aids the liqueur more than the latter serves to assist the dinner. It is therefore unnecessary to do more than merely enumerate this class of drinks, which never ought to enter largely into the expenses of the prudent manager of a household. At present they comprise the following list:—Cherry-brandy, usquebaugh, maraschino, clove liqueur, orange liqueur, parfait-amour, crême de rose, crême de café, badiane, liqueur au bouquet, Rossolis, milk punch, curacoa, noyau, nectar, and shrubs of various kinds; also, cordials of various sorts, as, citron, cinnamon, ginger, &c. The receipts for some of these are given in the next chapter.

1104. SPIRITUOUS LIQUORS, SPIRITS, OR

Ardent Spirits, which are merely different names for the same thing, are the result of the distillation of some kind of fermented liquor. Thus, *Cognac* or *French brandy* is distilled from the juice of the grape, *rum* from the fermented juice of the sugar-cane; *gin*, *whisky*, and *British brandy* from infusions of malt, oats, or barley, sometimes mixed, with potatoes or carrots. *Arrack*, distilled from rice, is not used in this country at all, nor are any other ardent spirits except pure alcohol, more or less mixed with distilled water, and sold under the name of *spirits of wine*. This is generally of the strength called *proof spirit*, which is ordered by the excise laws to have a specific gravity at 60 degrees of 0.9198, and should contain about one-half of distilled water, or, strictly speaking, 49½ per cent. by weight of real alcohol.

1105. Alcohol is the base of all ardent spirits, the difference only consisting in the admixture of volatile oil or flavouring matter of some kind, and in some cases of colouring matter added to suit the market, as in the dark brandies and rums. The formation of alcohol by fermentation has already been described in par. 1081; but in order to procure it in a separate state from the woody matter, tannin, and salt, &c., with which it is mixed, recourse is had to the still, which acts by means of heat in causing the alcohol to evaporate, and then with the aid of a long tube exposed to cold water in a vessel through which it is coiled, the vapour is condensed and collected at its extremity. In *fig.* 85, such an apparatus is shown, being of the most simple construction, but sufficient for all practical purposes: A is the vessel or boiler in which the fermented liquor is placed, and heated by the fire beneath; B is the head of the still, dropped on at the joint, and luted with paper covered with flour and water; C is a long pipe of metal or earthenware, which is convoluted, and passed through a vessel of water (D D), until it finally emerges at E, where the spirit appears, and is collected. When a spirit is thus distilled from fermented liquor, it is very weak, being largely diluted with water, which comes over with it; but by a second distillation at a lower temperature, and by collecting only the first products, a much stronger alcohol is obtained, though in this way the whole of the water cannot be removed. The strongest rectified spirit has a density of about 0.835, and yet contains 13 or 14 per cent. of water, and in order to obtain pure alcohol it must be re-distilled with half its weight of fresh quick-lime. The lime is coarsely powdered and put into the retort, and upon it is poured the alcohol, which is to be thoroughly mixed by agitation, and left for several days with the mouth closed. At the end of that time the pure alcohol is distilled over by the heat of a water-bath, the lime having such an affinity for the water with which it forms a hydrate that it will not part with it, and the alcohol is perfectly free from it. Pure alcohol is a colourless, limpid fluid, of a pungent but pleasant taste and odour. Specific gravity at 60 degrees, 0.7938. It is very inflammable; presenting a pale-bluish flame, free from smoke. It never freezes, and boils at 173 degrees. When diluted with water the boiling point is higher, in proportion to the quantity present. The act of dilution causes the evolution of heat, and a contraction of bulk, so that when mixed together in the proportion of a pint of each, the mixture does not measure a full quart. Alcohol, whether pure or mixed, has a great affinity for water, and absorbs it from the atmosphere, or through animal membranes. Its solvent powers are considerable, the alkalies, and especially potassa, forming compounds with it. The vegeto-alkalies, resins, essential oils, and numerous other bodies, all submit to its powers, and hence it is a valuable aid in all chemical and manufacturing operations requiring a strong solvent of these substances.

1106. French Brandy is distilled from the juice of the grape only, the flavour depending upon the essential oil contained in the fruit and fruit-stalk. The best is made in Cognac, which has therefore given its name to the French brandy in general, though large quantities are also made in other parts—as Bordeaux, Rochelle, &c. The wine used is generally that from inferior grapes, which are not likely to make good wine; and it is distilled as soon as the fermentation has passed through the stage of development which produces alcohol, and before any amount of acetous fermentation has commenced. The quality depends chiefly upon the grape-juice and the care taken in its fermentation. In its natural state it is of a very pale colour, almost like water, and in this condition a great quantity is consumed in France, but some is more or less artificially coloured. For the British market almost all is coloured with burnt sugar, two shades being adopted, one called *pale brandy*, the other *brown brandy*.

1107. Rum is obtained in a similar manner, as regards the distillation, but the liquor from which it is drawn is made of molasses, and the skimmings of the hot cane-juice which rise to the surface in the manufacture of the sugar. These are mixed with water and fermented with a little of the lees of former similar fermentations, by which the whole is converted into an alcoholic liquor, from which the rum is distilled in the manner above described. A good deal of acetic acid is generally developed, and passes over with the spirit, but this in process of time is absorbed by the wood of the casks, and age therefore is required in order to make rum either palatable or wholesome. Rum is made almost entirely in the West Indies, and chiefly for the use of the navy—comparatively little being imported into this country for any other consumption.

1108. Good Rum is of a clear brown, the taste is soft and mellow, and the effects on the body very manifest, but not followed by any ill-consequence. Bad rum, on the contrary, is harsh and hot in the mouth; limpid and devoid of much colour, though some of it is artificially coloured with burnt sugar, &c. The strength of rum is very considerable, it containing on the average about 53 per cent. of alcohol.

1109. Corn Spirit is distilled from an infusion of malt sometimes mixed with raw grain. In either case the flour is converted into starch before fermentation; in the former by germination, and in the latter by contact with the malt. The mashing and fermentation are conducted upon similar principles to those mentioned at par. 1061, and then the alcohol with a large portion of water is drawn off, and again distilled or rectified to attain a greater strength. This spirit is called malt-spirit, and from it the manufacturer either distils gin or whisky, or Hollands, British brandy, or spirits of wine.

1110. Gin, which is the spirit chiefly used in London, is produced in great measure from barley alone, with the substitution of wheat, oats, rye, or Indian-meal, when the price of any one is below that of barley, taking into consideration the relative power of each in producing spirit. The corn is ground, and it is then mashed in the usual way, and distilled two or three times over; but the rectifier must be a distinct person from the distiller, according to the excise laws. The distillers are generally very large manufacturers, but the rectifiers often conduct their business on a limited scale, buying the proof-spirit of malt, and making it up in the course of its rectification so as to convert it into gin, London gin, cordial gin, British brandy, or any other similar compound. Whisky, the spirit commonly drunk in Ireland and Scotland, is distilled direct from the fermented liquor produced from malt and water, the flavour being communicated by the smoke of the fuel which is used. It is stronger than gin, and nearly equal to proof. The Scotch whisky distillers are said to obtain twelve gallons of whisky from six bushels of malt. Gin and Hollands are flavoured with juniper berries, the former being frequently made up with turpentine instead, either alone or mixed with a certain proportion of juniper Whisky, as being the most pure, is the most wholesome of these spirits, and nearly equal to Cognac, which is by far the best stimulant we have. British brandy is made up with burnt sugar, and other flavouring materials, but is nothing but corn-spirit, however palatable it may be made. It is not to be compared, in point of stomachic power, with the real imported article, which should always be obtained for any purpose requiring its invigorating power.

1111. The Quantity of Spirits consumed in Great Britain is enormous, the home consumption in the year 1854 being, for the three kingdoms, nearly thirty-one millions of gallons, which, divided among twenty-nine millions of inhabitants, gives rather more than a gallon of spirit per head per annum, over and above the smuggled and illicit spirits, and other fermented liquors, as wine, ale, porter, and cider—from which if the alcohol were extracted, it would probably give at least three gallons per head per annum more.

1112. The Adulteration of Wines and Spirits is carried on to a fearful extent, and chiefly with substances that defy detection by chemical or microscopical demonstration. One single fact is sufficient to show the amount of this illicit trade. Every one knows, from practical experience, that the quantity of champagne drunk in England has increased in the last twenty years at least tenfold, yet from a statement of the Chancellor of the Exchequer, recently made in the House of Commons, it appears that *the imports of it are the same now as they were twenty years ago*, consequently the whole of the increase must be factitious, and not even imported as champagne. It must therefore be made up in this country from other foreign wines, aided by cider, sugar of lead, and a variety of flavouring materials which chemistry places in the hands of the unprincipled. The whole quantity of sherry annually exported from Xeres to all parts of the world, does not exceed 25,000 butts, of which a large proportion goes to America; and as the demand is immensely greater than can be supplied from this limited source, it is made up by shipping the wines of Malaga as sherries, previously bringing them round to Cadiz, and thence reshipping them. This, however, is a venial fraud, compared to the absolute manufactures which are every day going on in this country, as proved before the late committee of the House of Commons. Spirits also are made up to a frightful extent; and, in the case of gin, with the most poisonous compounds, such as superacetate of lead and spirits of turpentine, which are extensively employed. Among the liqueurs the same mischievous tricks are played; and it is stated, that more than three-fourths of the wines and spirits sold in England are tampered with in some way or other, besides the alteration of colour, by addition and substraction, which are constantly practised as a matter of course.

1113. The Comparative Strength of the various kinds of spirit is given at par. 1095.

1114. The Prices of the more common kinds are inserted in the list of wines and spirits at pages 330, 331.

Sub-sect. D.—Unfermented Liquors.

1115. Unfermented Liquors are every year gaining more hold on the lower classes of the British public, which is a fact of the greatest importance, as showing that the national vice of drunkenness is gradually leaving them. Of these the chief are ginger-beer, lemonade, soda-water, potash-water, Carrara-water, orangeade, sherbet, currant-water, raspberry-water, whey. Receipts for these will be found in the next chapter; but as, with the exception of soda-water, they are much better when made at home, and also cheaper, my readers are advised to have recourse to that expedient in procuring them. Ginger-beer is sold in large quantities at 1d. per bottle, which is as cheap as it can be made, but the quality is generally bad, and the effect upon the stomach by no means what is expected. Soda-water requires an apparatus for its development, in order to force the carbonic acid gas into it; but even that is now supplied at a price which brings it within the reach of most people. Still I am ready to admit that the soda-water so made is not equal to the average of those offered to the public by Schweppe and a few others. In every case about five grains of carbonate of soda or potash are dissolved in each bottle of water, and into this quantity several cubic ounces of carbonic acid gas are forced by an air-pump, or in the machine by the mere force of its development from the decomposition of one of its salts. Lemonade is made to effervesce in the same way; but the juice used is too often not pure, but adulterated with sulphuric or tartaric acid. Most of these cooling drinks are sold at prices varying from 3d. to 6d. per bottle.

Sect. 18.—Chandlery and Coals.

Sub-section A.—Lighting Materials.

1116. Under the head of lighting, as bearing upon the construction of houses, the articles used for the purpose have been minutely described at page 119 *et seq.* All those mentioned in that chapter, except gas, are sold by the chandler; but as the prices and qualities of each are there fully detailed, it will be unnecessary to repeat them here, except in a general list of chandlery-goods, which may be found convenient, and is therefore given at the end of this section. In the country these articles are often sold in what are called the general shops, together with groceries and the contents of the London Italian warehouses.

Sub-sect. B.—Heating Materials.

1117. These, also, have already been alluded to at page 104 *et seq.* Coals and coke are generally sold by the coal-merchant, except in small quantities retailed to the poorer classes at an enormous increase of price. At page 106 the varieties of fuel are described in all respects except prices, which in London are somewhat above the average of England, but not to any great extent.

1118. The Wholesale Price of Seaborne Coal in London is now from 14s. to 17s. 6d. per ton, which, with 8s. for delivery and dues, makes the price to the consumer about 22s. to 25s. 6d. per ton. Inland coals, by retail, are from 18s. per ton, delivered, to 23s.; Welsh anthracite, 24s.; and small coal, 13s. per ton. Silkstone is sold at present for 21s., and I believe the best quality of house-coal may be purchased, to be delivered anywhere within five miles of the centre of London, for 23s. per ton. The name and qualities of the various coals are too numerous to require minute description, and the consumer will gain nothing by the enumeration, as he cannot be expected to know, without great practice, one from the other.

1119. Firewood is another important item, especially in London and the larger cities and towns. Patent firewood and patent fuel are now very generally used for lighting fires, and the former may be obtained at the rate of four pieces for a penny, each of which serves to light one fire. This kind, therefore, may be considered as economical as any, excepting in the country, where wood is comparatively cheap, and where straw or shavings are readily obtained to make the initiatory blaze. Wherever these cannot readily and cheaply be procured, the patent fire-lighter is the best for all purposes.

1120. Coke forms an excellent aid to the cook's fire, or even for those of the sitting-room, if added on the top of a good coal fire. It is sold at from 10s. to 12s. per chaldron.

1121. LUCIFER-MATCHES are made in enormous quantities, for giving an instantaneous light, and at prices which to our forefathers would have appeared incredibly small. Phosphorus is the chief material used for the cheaper kinds, but as this requires the intervention of sulphur in order to light the strip of deal to which it is fixed, it is not suited to the drawing or bed-room. In the present day a very elegant match, with a body of wax and cotton, is manufactured for use in these rooms, and as no sulphur is applied the effect is not unpleasant. They are sold at all prices, from 1d. to 6d. per hundred; those at 8d. being really very useful and pleasant matches. The common kitchen-match with sulphur and phosphorus ends, is quite sufficient for the purposes of the cook, and sold at the rate of a halfpenny per hundred, including the box, so that the old flint-and-steel tinder-box is entirely superseded.

SUB-SECT. C.—CLEANSING MATERIALS.

1122. SOAP stands at the head of this list as the most generally useful, and indeed, as constantly required in a great number of domestic operations. It may be divided into *yellow soap*, *white* or *curd soap*, *soft-soap* and *scented soap*. All soap is a compound in definite proportions of some oil, fat, or resin, with a saponifying base, which must be alkaline if it is intended to use the soap for cleansing purposes, inasmuch as the compounds with metallic oxides, lime, and acids are insoluble in water. Fats are composed of a solid substance called *stearine*, and a liquid one denominated *elaine*. When either of these is boiled with a strong solution of caustic potash or soda, a remarkable change takes place, called *saponification*. The product is a viscid homogeneous, and transparent mass, freely soluble in warm water, and partially so in cold, but insoluble in saline solutions. When any common fat is treated with a hot ley of potash or soda, a solid pearly matter, *margaric acid*, and a fluid, *oleic acid*, enter into combination with the alkali, while a third matter, the *glycerine*, or sweet principle, as it used to be called, remains free and dissolved in the mother-liquor. Common soap is a mixture of an alkaline margarate and oleate, in proportions varying with the peculiar kind of fat employed. Soap formed with vegetable oil is chiefly an oleate, whilst that made with tallow is on the contrary almost entirely a margarate. All fats do not saponify equally well, the best being oil of olives and almonds, next to which rank in the order in which they are enumerated—hog's-lard and tallow, colza oil, poppy oil, fish oils, hempseed oil, linseed oil, palm oil, and resin.

1123. The following are the qualities of soap:—The specific gravity is somewhat greater than water, taste slightly alkaline. When heated it speedily fuses, swells up, and is then decomposed. Dried in thin slices, it becomes hard, but the whole combined water does not leave it even by careful desiccation in a sand-bath. It is much more soluble in hot than in cold water, and the solution is constantly affected by the greater number of acids which seize on the alkali, and either separate the fatty particles, or unite with them to form a soapy emulsion. It is also decomposed by almost all the earthy and metallic salts, which give rise to insoluble compounds of the oleic and margaric acids, with the salifiable bases. Soap is soluble in cold alcohol, and to a still greater extent by the aid of heat. When a saturated solution of soap in boiling alcohol is cooled, a transparent mass of a yellowish-brown colour is produced, which retains its transparency when dry, if the soap was made from tallow and soda.

1124. THE ART OF SOAP-MAKING consists principally in determining from the appearance of the fats, and other circumstances, what kind of lixivium should be employed during each step of the operation, which therefore requires great experience, and considerable powers of observation. The form and size of the bubbles, the colour of the paste, the volume of the material thrown out on the side of the vessel, the consistence of the matter, and its disposition to swell, also the appearance of the steam, all furnish criteria by which to regulate the process. It sometimes happens that the paste, though to all appearance very firm, when set in the cold air to harden, throws out a quantity of water, and resolves itself into small grains possessing little consistency. When this is the case, it is evident that there is too great a proportion of ley, which must then be separated by means of common salt. Frequently, also, the paste becomes greasy, and the oil appears to separate from the soda. As this generally occurs when there is not a sufficient quantity of water mixed with the paste to keep it in combination, it will be found necessary to remedy this defect by adding to it a little more water, or weak lixivium. Potash is employed as follows, in the manufacture of hard soap:—A ley of this alkali rendered caustic by quicklime, is used in the saponification, and to the soft soap which is the result is added common salt, or a kelp ley, by which an abundance of muriate of soda is supplied. The muriatic acid is attracted by the potash, and forms muriate of potash, which dissolves in the water, and is drawn off in the spent ley, while the soda combines with the fat to form a soap, which, when cool becomes perfectly solid. Two tons of tallow, properly saponified, ought to yield three tons of marketable white soap.

1125. Besides the common white soap described above, two more costly kinds are made under the names of Marseilles white soap and Castile soap. These are now imitated to great perfection by the English manufacturers, who adopt the following proportions, viz:—

Marseilles White Soap.

	lb.
Soda	6
Olive oil	60
Water	34
	100

Castile Soap.

Soda	9
Olive oil (carefully prepared) ...	76½
Water and colouring matter ...	14½
	100

1126. Soft Soap is a compound of potash and fat or oil. Three kinds are known in commerce, viz., *common soft soap*, which is made with coarse fish oil; *green soap*, made with vegetable oils, such as rape and poppy oil; and *white soft soap*, the produce of the mixture of potash and tallow. In the manufacture of the common and green soaps, the art consists in the combination of the oil with the potash without the soap ceasing to be dissolved in the ley; while, on the contrary, in the fabrication of hard soap, it is necessary to separate the soap from the ley, even before the saturation of the ley is accomplished. But soft soap contains more alkali than is absolutely necessary for the saponification of the oily matter, and is really a perfect soap dissolved in an alkaline mother-liquor. It may readily be converted into hard soap by the addition of common salt.

1127. Toilet Soaps are made with hog's-lard, oil of almonds, nut oil, palm oil, or suet, saponified either with soda or potash, according as they are desired to be hard or soft, and with as little excess of alkali as possible. Glycerine is now artificially combined with these soaps, instead of being wholly removed in the mother-liquor; but the process is a difficult one, and it is even said to be impossible. Honey has been used for the same purpose, that is, to soften the skin; but there is no doubt that if glycerine can really be incorporated with the soap, it ought to exert a very mollifying effect upon the skin, if it remains in the condition of pure glycerine as obtained in the usual way.

1128. Soaps of all kinds are said to improve by keeping—that is, they become more hard and dry, and do not so readily dissolve. The object is attained as far as the saving in soap is concerned, but as the cleansing is generally in proportion to the amount used, it does not quite appear an unmixed good. In washing, three things are to be attended to—1st, the perfect purification of the material; 2nd, the avoidance of injury to its texture or colour; and, 3rd, the saving of expense in materials and labour. The last of these is the element which is chiefly called into play in keeping soap, and in fact only the first section of it; for the older the soap, the more labour is occupied in rubbing it off and dissolving it, and the more friction must be given to the material, and if these are omitted the less perfectly will it be purified. Nevertheless it is always held by good managers that soap ought to be kept, and I confess that I am not able to dispute their dictum, though I cannot theoretically understand its force.

1129. The Adulterations which are most commonly practised on soap are the following:—When the soap is made it is rendered heavy by the addition of a large quantity of water; frequently, also, pulverized lime, gypsum, or pipe-clay, are incorporated with it. The first of these frauds is easily detected by the rapid loss of weight which the soap suffers after exposure to a dry air; the second is also not difficult of detection by solution in alcohol, when the earthy matters separate and fall to the bottom, and may at once be collected and examined.

1130. The Price of Soap varies greatly according to the quality, and the existing value of tallow, oil, soda, and potash. Yellow soap being that which is chiefly used in the operations of the laundry, is the kind which mainly affects domestic economical calculations, though in a large family the toilet soaps form an important item of yearly expenditure. At the present time yellow soap is sold at prices varying from 32s. to 48s. per cwt.; mottled soap (which is much used for the skins of children), 50s. per cwt.; and the various toilet soaps at 1s. 4d. to 2s. per packet of twelve cakes, or from 8d. to 1s. per lb.

1131. Starch comes next to soap in utility, being, it is true, not so much used for cleaning as for the prevention of dirt, the glazed surface produced by it being a great protection against that foe to domestic comfort. It consists of very minute oval-shaped granules, easily distinguished by the microscope, and dissolving readily in boiling water, to form a jelly, in which state it is made use of by the laundress (see article, Washing, in the next chapter).

1132. Several Vegetable Substances are employed to give us their starch, the chief being wheat, rice, and potatoes. *Wheat starch* is made by soaking wheat in cold water until the husk readily separates, and the grains have become full of milky matter, which is the farina softened in water. The whole mass of wheat thus softened is now subjected to pressure, by which means the milky fluid flows out, and is collected. This is suffered to stand for some days, when a slight fermentation takes place, by which the gluten is decomposed and converted into acetic acid and alcohol, while the starch remains undissolved. It now only requires to be well washed from the sour liquor in which it is contained, and as it is not soluble in cold water this is readily effected, after which it is made into a paste, slightly coloured with blue, and heated in an oven until it cracks into those semi-crystalline masses in which it is sold to the public. *Rice starch* is made much in the same way, but containing little or no gluten, there is much less difficulty in getting the starch in a state of purity. *Potato starch* is made by grating raw potatoes into a vessel full of clear water, and, after stirring it well, allowing the fecula to subside; the water is then to be poured off, and fresh water added, and, by repeating which two or three times, the starch remains behind in a state of purity. It is not, however, so well adapted to the purposes of the laundry as wheat starch.

1133. THE PRICE OF STARCH is from 4d. to 6d. per lb.

1134. POTASH OR PEARLASH is largely used in washing to aid the soap in removing grease from the articles to be cleansed. It would appear, that as soap is composed of soda or potash, combined with oily matter, it would answer better to use the alkali alone, as the grease in the clothes would combine with it, and at once become soluble; but it is found by experience that this is not the case, and that as there are many substances of a dirty nature which are not greasy, soap must be used to a considerable extent, aided, however, by free alkali, in order to combine with the grease really met with. Hence it is that pearlash has for many years been used as an adjunct to soap; and in the present day the numerous receipts sold in its place are patronized by all classes—as, for instance, Green's patent washing-powder (made at West Bromwich, which is the best of the kind), Manby's cleansing crystal, &c., all of which depend upon alkali in some form for their efficacy in cleansing foul linen. Pearlash is obtained from calcining potash, and then re-dissolving, filtering, and crystallizing. Potash is the soluble salt remaining after calcining certain plants, the ashes being collected and a ley made from them with water, which is afterwards poured off, and evaporated. It is imported chiefly from America and Russia, the price being about 10s. per cwt., or 6d. to 8d. per lb. by retail.

1135. SODA, OR BI-CARBONATE OF SODA, as it is properly called, is also used in washing, and for many similar purposes. It was formerly obtained by burning kelp, and imported as barilla, which is an impure carbonate of soda; but it is now extensively manufactured in this country by the decomposition of common salt (chloride of sodium). Extensive manufactories are in existence in the neighbourhood of the saline springs of Cheshire and Worcestershire, which convert large quantities of common salt into the useful substance here alluded to, so that the price has been brought down from 7s. per lb. to little more than that sum per cwt.

1136. POWDER-BLUE AND STONE-BLUE are merely colouring materials, introduced into the laundry to give linen a hue which is as far opposed as possible to the yellow stain peculiar to confined situations and dirty habits. *Powder-blue* is chiefly obtained from smalt, mixed up with a very little starch; smalt being cobalt roasted and melted with twice its weight of sand and an equal weight of potash. *Stone-blue* is merely indigo reduced by adding starch or whiting.

1137. BLACKLEAD is a carburet of iron, and for domestic purposes is used to give a polish to iron grates, and similar surfaces. It is found in mines, and consists of 92 parts of iron and 8 of charcoal. The coarse qualities suited to this purpose are sold at from 10s. to 12s. per cwt; by retail, 6d. per lb.

1138. VARIOUS SANDS AND SANDPAPERS are sold for making the surfaces of metals bright by friction. Sharp sea-sand is used of various degrees of fineness, also powdered pumicestone. Powdered glass, as well as sand, are glued on to cartridge-paper, and make the sandpaper and glass-paper of the shops.

1139. BRICKS AND SCOURING STONES are also sold at the oil-shop, the former for cleaning knives, for which they are specially made, containing a large proportion of *sharp* sand. The stone for cleaning flags is a lime-stone obtained from the nearest suitable locality, and sold at per lump.

1140. ROTTENSTONE is an earth of an ash-brown colour, very light, moderately hard, dry, and useful as a polishing powder

1141. FULLER'S EARTH is of a greyish-brown colour, hard, compact, and rough, but scrapes with a polished surface. When scraped, the powder is very fine, and absorbs grease very readily, so that it is used for that purpose.

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Blankets, each	9d.	to	1	0
Towel			0	0½
Window-blind			0	1
Toilet cover			0	1
Table-cloth...			0	3
Ditto, large			0	4
Table napkin			0	1
Kitchen cloths, tray cloths, dusters, &c., at per doz.			0	9
Couvrette			0	1
Gentleman's shirts, each ...	3d.	to	0	6
Ditto night-shirt			0	3
Ditto nightcap			0	0½
Ditto collar			0	0½
Ditto drawers			0	2
Ditto stockings...			0	1
Ditto handkerchief			0	0½
Ditto flannel waistcoat			0	2
Lady's muslin dress ...	6d.	to	1	0
Ditto dressing-gown ...	6d.	to	1	0
Ditto collar			0	2
Ditto sleeves, per pair			0	2
Ditto handkerchief			0	0½
Ditto frills			0	1
Ditto habit-shirt, without collar...			0	1
Ditto petticoat			0	3
Ditto ditto body			0	1
Ditto chemise			0	2
Ditto drawers			0	2
Ditto stockings...			0	1
Ditto nightgown			0	3
Ditto nightcaps ...	1½d.	to	0	3
Ditto flannel petticoat			0	2

Children's things are generally charged by the dozen, until they are eight or ten years of age, when they are charged as above. The price per dozen will be found in the next paragraph.

1149. **Washing by the Dozen** is charged 1s. per dozen, exclusive of counterpanes, blankets, sheets, large table-cloths, and gentlemen's shirts. When these are included, the price is raised about 3d. a dozen, but few washerwomen like to undertake the contract, as there is no limit to the number which may be imposed upon them. Infant's things are charged 9d. per dozen, except frocks and pelisses, which are from 3d. to 6d. each.

1150. The most usual plan is to compound for the housemaid's cloths and kitchen-linen, and servants' linen; the former at 9d. per dozen, or 15s. per quarter; and the latter at 10s. per head per quarter, if they are confined to one cotton dress per week; or if allowed two, 12s. per quarter. Over and above these articles, there is not much trouble in setting down all the bed, table, and family linen, and charging it at per piece, according to the annexed or a somewhat similar scale. In this way it will not, with moderate care, amount to quite so much as if contracted for at the annual rate mentioned in par. 1147.

Sect. 18.—Dress.

1151. **Female Dress** is a constant source of domestic jars, inasmuch as the master is not always aware of the necessary expenditure, and, in some cases, even if he knows it he is not inclined to allow it. It is quite true that he is often imposed on, but it is also the case that he often grumbles at, or refuses to pay for, what is really required to make a proper and respectable appearance. Many ladies are not contented without a constant change, and will not appear in the same dress for many successive days. This is all very consistent with a long purse, and the taste may be gratified by those who possess it, but those who have limited means, and perhaps a large family, are not expected to appear in as great a variety of exterior as the flowers of the succeeding seasons. At all events, it is not a part of domestic economy to enlarge upon such a gratification of taste, which is more fit for the pages of a book of fashions; and all that will be here attempted will be the best and cheapest method of effecting what is necessary. *Ladies' dress* may be considered under the three heads of *body and fine linen*, *in-door dresses*, and *out-door dress*.

1152. **Body and Fine Linen** are generally best made by purchasing the materials and making them up at home, with or without assistance. In the country, where it is often desirable to find employment for the poorer classes, and where the charges are very moderate, the linen is made up by those of the villagers who can sew neatly; but in London, where the charge for everything in the way of work is high, it is no economy to "put out" the sewing. The prices for making are as follows:—

COUNTRY PRICES.

		s.	d.		s.	d.
Petticoats,	each	2	0	to	2	6
Night-dresses	,, ...	1	3	,,	1	9
Chemises	,, ...	0	10	,,	1	2
Pair of drawers	... ...	0	8	,,	1	0

TOWN PRICES.

		s.	d.		s.	d.
Petticoats,	each	2	6	to	4	0
Night-dresses	,, ...	1	6	,,	3	0
Chemises	,, ...	1	0	,,	2	0
Pair of drawers	... ...	0	10	,,	1	6

Of course, in different places the prices vary very much, but this will give some idea of the economy of having body-linen made at home if possible. Collars and muslin sleeves are generally *bought*, but if the lady has time the latter are easily made at home, for half the cost of ready-made sleeves.

1153. **In-door Dresses** are made by the dressmaker, either at her own home or at the house of her employer. Under this term are comprehended two classes of workwomen, those who *take in* work and those who *go out in search of it*. The former is more generally patronized than the latter, and the employer either gives her the dress, letting her find the materials for making it up, or buys all the trimmings, &c., herself, giving them to the dressmaker to use. The latter plan, however, effects very little, if any, saving, as the dressmaker will generally contrive to "make a bill," in spite of the lady's precautions. The charges for *making* a dress vary from 5s. 6d. to 15s., or even more in some of the fashionable houses. It is better to have a dress *well-made* at first, as more is often spent in alterations than would have originally been given to a good workwoman; but that desideratum, independently of extras for linings, &c., will not cost more than 6s. or 7s. a dress, taking care to have as little trimming as need be, for it is by those smaller items that the bill is made to mount up to some dreadful sum, to the horror of the unfortunate lady who fancies she has made such a bargain in "a lovely muslin for 7s. 6d.," till she opens her bill, in which "making dress, &c., £1 5s." meets her astonished gaze. *Making dresses at home* is a doubtful economy. The charge in London is 2s. per day; and as the workwoman will scarcely finish a dress in less than one and a half or two days, the cost of this amounting to 3s. or 4s., with her food, and the chance of the dress not fitting when made, detract from the apparent economy of *making at home;* but for *altering* and *repairing* dresses, or for making children's frocks and pelisses, &c., the plan is often useful, as for those things high charges are made, and an industrious workwoman gets through an amount of sewing for 2s. which would, if sent to a regular dressmaker, bring in a bill for 7s. or 8s. In the country, where young women go out at from 10d. to 1s. 6d. per day, it sometimes answers to have common dresses made at home, as the usual dressmaker often lives some miles from her employer's house. If a lady's-maid is kept, of course the sewing and dress-making belong to her department, and in that case little or nothing requires to be sent out.

1154. **In-door Shoes** do not form a very expensive item, except for visiting purposes, for which white satin shoes cause rather a large outlay. Common in-door shoes cost only from 3s. to 6s. per pair, and last for a long time.

1155. **Out-door Dress** includes mantles, shawls, bonnets, gloves, neck-handkerchiefs, veils, walking-shoes, and many other trifling articles which the fashion of the day renders essential. Handsome shawls are expensive items, costing from three guineas to forty or fifty guineas a piece. Mantles are always better made by the milliner than at home, as the pattern is constantly varying. In fact, all the articles here enumerated must, in the usual way, be obtained at the milliner's shop, except the walking-shoes, which form rather a large portion of the necessary annual expenditure in those who take a proper amount of walking exercise.

1156. **The Expenditure for Female Dress** may be said to vary from £6 to £60 per annum. The first-named sum *may* be made to supply a decent and respectable exterior, but only those who have been long accustomed to manage for themselves can contrive to eke it out, so as to make the wearer presentable in the society of ladies and gentlemen. For those who go out in the evening to any extent, it would be utterly impossible to dress at less than £15 a year, and for most ladies £40 will barely suffice. This last-named sum is, however, often made to do what is required, and is the common allowance for single daughters among the middle classes out of London, and in the metropolis also, except in the fashionable circles, where it would be found utterly inadequate. Married ladies who go into society are expected to dress in more expensive silks and satins than would be suited to their single friends, and therefore the highest sum named above may be fixed as a moderate allowance for their annual equipment.

1157. **Gentlemen's Dress** is almost always obtained ready made from the tailor, hatter, and shoemaker. Sometimes, however, the materials for clothes are purchased and made up by tailors who profess to undertake that kind of work. Few people, however, are able to select good cloth, which is now often made of such inferior materials as to wear out in a very short time. I believe, therefore, that there is very little economy in attempting this plan, unless it so happens that the purchaser has a knowledge of good and bad broadcloth, in which case he may effect a saving of 30 or 40 per cent., by getting his own materials made up. In hats, and boots or shoes, this is impossible, and therefore there is no choice in the matter. With regard to body-linen, it will be found much better, and also cheaper, to have it made at home than to purchase it ready-made, inasmuch as the work of the latter articles is always bad, and the materials also, in many cases.

1158. **The Annual Cost of a Gentle-**

MAN'S DRESS may be made to range from £10 to £50 and upwards. The first-named sum will only procure one suit a year, with an overcoat once in three years, one hat, and three pairs of shoes; the body-linen being of the plainest description. For some people, with great economy, this sum may be made to afford a decent exterior; but less than £30 a year will not allow for morning and evening dress, a decent hat, and boots in good order.

1159. CHILDREN'S DRESSES *may* be made of very inexpensive materials, and they may also be made a great source of extravagance. It will generally be found that the mother's dresses, when worn out, will cut up and alter for her girls; and the same applies to the clothes of the boys, who may often be dressed at the price of labour only in converting coats into jackets. There is no doubt that a well-dressed girl is a much more delightful object for the mother's eye than if she were reduced to the necessity of appearing in a badly-dyed merino of her mother's: but when a better cannot be afforded, it is far happier for all parties that the children should be brought up with a practical knowledge of the advantages of economy, than that they should be rigged out in silks and satins at the cost of a clever manœuvre to obtain the money from the father in order to pay for them; and often perhaps when they know he cannot afford it. Children may thus be made a source of unmixed annoyance, or, on the other hand, they may be brought up to afford gratification and delight to both their parents and themselves, by the reflection that no care and economy are spared in making them "fit to be seen," and yet that no more is really spent than is necessary to make them so.

CHAP. II.

HOME MANUFACTURES.

SECT. 1.—GENERAL REMARKS.

1160. The present chapter includes the various receipts for making bread, beer, &c., and for preserving and pickling, as well as the management of the poultry-yard, dairy, and laundry. In some cases it is desirable to adopt the home-manufacture on account of the saving in cost, while in others the produce is more genuine, and also more wholesome—as, for instance, bread and malt liquor. Sometimes, when the process for making any article at home is the same as that described in the last chapter, no further account will be found here, but only the comparative cost.

SECT. 2.—HOME-FED MUTTON, PIGS, &c.

1161. BEEF is too large in carcass to make it possible or convenient to kill a bullock for home consumption, except in very large establishments, farm-houses, &c. MUTTON, however, will often answer in retired situations, where there is no regular butcher, and the choice is between mutton and nothing. In point of economy, few people will be able to compete with the butcher's meat, inasmuch as sheep do not thrive in small numbers, or in the kind of pasture which is generally attached to private houses. Wherever I have known the attempt made, and the sheep kept till they were fit for the knife, the mutton has cost half as much again as it would be worth in the butcher's market. Of course, farmers can keep a few sheep for their own use, and kill them as they want them, but this does not serve the general housekeeper. VEAL is still worse than mutton, as it keeps badly, and is larger in the carcass.

1162. PORK is an exception to the general rule, as regards meat, as it may be produced to great advantage by any one who has a garden and refuse vegetables from it. Among the cottagers this is fully recognized, and "the pig" is generally expected to turn out so advantageously as to pay the rent. In order, however, to carry out to advantage the keeping of this animal, three things are to be chiefly considered—1st, *the kind and size of the pig suitable to the amount of food*; 2nd, *the most economical kind of food for fattening pigs;* and, 3rd, *their general management.*

SUB-SECT. A.—THE PIG.

1163. THE KIND OF PIG most likely to be converted into cheap and good pork and bacon, is not the high-bred "show-pig," but one of somewhat less aristocratic lineage. Those which take the prizes at agricultural shows are more serviceable in keeping up the breed by admixture with coarser kinds, but the animals themselves are not hardy enough to bear the neglect and mismanagement which they so often have to endure, although admirably adapted for making bacon-pigs of large size, when managed with judgment, and fed with proper food. The model-pig for the use of the private consumer should have a broad brow, a short snout, ear *not* small, and a moderate quantity of hair. The little neat, prick-eared, naked pig will get too fat, and weigh little for its age; and, on the other hand, the long-snouted, long-legged, and long-backed animal, although attaining to great weight, does so by an expenditure of food more than the increase of weight will counterbalance. All pigs should have a tolerably arched back, not sinking in the middle, which latter form prevents the proper development of flitch; but this is not of so much importance in small pigs, as in those intended for bacon. If, therefore, the intending pig-keeper can procure an animal with the above characteristics, he need not trouble himself much about the breed, though, at the same time, it is notorious, that in every county there are certain peculiar kinds which are more celebrated than others for hardihood and for feeding qualities.

SUB-SECT. B.—THE BEST FOOD FOR PIGS.

1164. THE MOST ECONOMICAL KIND OF FOOD FOR PIGS kept by private individuals, is undoubtedly the refuse or superfluous produce of a garden, together with the contents of the wash-tub. Small potatoes, cabbages, cauliflowers, and brocoli, not wanted for the house, together with pea and bean shells, may all be mixed with the wash and given to the pig, who will enjoy this food immensely, and thrive on it *as long as the weather is warm*, if it is thickened occasionally with a little gurgeons. By the month of September, at the latest, this food must be changed, in order to commence the process of fattening, for which there is nothing better than potatoes, boiled or steamed, and mixed with barley-meal; and towards the end an equal quantity of this last and bean or pea-meal. If the pigs are healthy, and have been fed regularly, they will not require more than two or three months' fattening even for bacon, so that by the time the cold weather sets in they may be killed, avoiding, however, severe frosts, as they interfere with the salting of the meat. If the commencement of fattening is delayed so long that it is not completed before the winter frosts are established, the pig does not gain weight so rapidly as he did before, the total consumption of food will be greater, and the relative improvement less;—in other words, a pig kept through the winter, and fattened at that time, so as to be killed in the spring, will not pay so well as one fattened in the autumn, and killed as soon as the weather will allow.

SUB-SECT. C.—GENERAL MANAGEMENT OF THE PIG.

1165. THE MANAGEMENT OF THE PIG when kept in a sty, as for private families, is as follows:—In the first place a warm sty is necessary, with a well-paved yard, sloping to a drain. This should be kept clean, and the lodging-part should be provided with straw, or some kind of litter, changed once a week. Not more than three or four pigs should be kept together, and in few private families will there be more than enough food for one. When a pig is not intended to be kept to any great size, it is a good plan to keep him on the horse-manure heap, if it is partially covered in, and of course supposing that there is one. By this plan the manure is more than doubled in value, and the pig also obtains a considerable amount of nourishment from the corn not digested by the horses. The heat of the manure also stimulates the growth of the pig, and the weight is proportionately increased; but when persevered in too long, it is apt to cause disease of the liver, followed by loss of flesh and general health. Pigs are generally fed three times a day, and are allowed as much as they will eat; but it is not a good plan to leave any food in the trough after feeding, as it injures their stomachs to be always picking their food. Even in small families an underground tank is better than a wash-tub, as it preserves the food sweet much longer, and prevents maggots from being developed, which are, however, no absolute loss of substance. When the fattening begins, a copper or steam-boiler is necessary, to prepare the food by boiling or steaming; but it should never be given till cool. Potatoes, carrots, Swede-turnips, mangel-wurzel, parsnips, or, in fact, any of our root-crops, may in this way be well-boiled and given mixed with meal; and avoiding the heating effects of bean or pea-meal until the last week or two, when they serve to give a double degree of firmness to the flesh and fat, without making it hard, which is the case after long-continued feeding upon bean-flour. The fitness for killing must be decided by the appearance of sufficient fatness, and this will vary according to the views of the proprietor, who may either like very fat or comparatively lean bacon; but, as I before remarked, if possible, the pig should not be kept through the cold of winter. For porkers, a week's keep on barley-meal and milk, if it can be procured, is the best mode of finishing them; but they are generally nearly fat enough before this change in their diet. Sucking-pigs are killed at four, five, and six weeks old.

1166. **THE BREEDING OF PIGS** is sometimes made a very profitable source of income, on the small scale, to the labourer or to the private gentleman. A sow will live many years, and bring numerous litters, having two in each year, and thus producing on the average from twenty to twenty-four pigs per annum. Supposing these pigs were killed as sucking-pigs, when they are worth on the average 6s. a piece, the sow will bring in £7 4s. per year, against which is to be set her food during that time, which will not amount to more than half the money. If, instead of this, the owner has a run for his pigs, and the refuse of a large garden, he may rear fifteen to eighteen of them as porkers, and sell them at 30s. a piece, with an expenditure of 10s., or a profit altogether of nearly £20. But to effect this requires great care and good management, as well as a good sow. If the one selected at first brings a good number of pigs, and rears them well, she is too valuable to be killed, and ought to be kept as long as she will breed, especially as she improves as a nurse with each succeeding litter. If, on the contrary, her litters are small, or she proves a bad nurse, she should be put under the farrier's care, and afterwards converted into bacon, which is exceedingly good in that case; a sow which has had one litter being as fit for making that article as any hog. When a sow is near the farrowing time, which is four months after her visit to the boar, she should be put in a sty by herself, with a moderate quantity of straw; if there is too great an abundance, she is apt to overlay the young pigs as they bury themselves in the straw. To prevent the risk of this, in a great measure, it is a good plan to fix a ledge of wood eight inches from the ground, so that there is a place into which the young ones may creep without fear of pressure. Some sows have also an unnatural propensity to eat their young, but this generally arises from bad feeding, and when once she allows the sucklings to fasten themselves to her teats they are safe from all danger of this accident. The sow with a large litter should be well fed on bran and barley-meal, with milk or whey; grains are also an excellent food; and it is always well, where there is the opportunity, to allow the sow to run in an orchard or paddock for an hour every day, shutting the pigs in the sty during the first three weeks, but afterwards allowing them to accompany her. The sucking-pigs are killed off as wanted, and those intended to be kept are castrated or spayed at a month or six weeks old, omitting those which are intended to keep up the breed, which are thenceforward called open-sows or boars.

1167. **IN KILLING THE PIG**, the feet are tied together, and the snout muzzled; the knife is then plunged deeply into the junction of the throat with the chest, where it divides the large vessels, and speedily causes death. The pig is usually starved for twelve hours previously, allowing water only. The blood is allowed to drain freely, and is collected for black-puddings, stirring it with a stick all the time. If the pig is small, and intended for salt pork, it is then scalded with water not quite boiling, after which the skin is scraped of the hair, and this plan is in some counties adopted for bacon-pigs also; but, generally speaking, for them the hair is singed off by sprinkling lightly a little straw upon the body on the ground, and setting fire to it, care being taken not to crack the skin. The burnt bristles and cuticle are then washed off, and the pig is raised by the hocks and its entrails removed. The inside of the body is carefully sponged, and the carcass remains till next day, to be cut up according to the plan described at page 251.

1168. **THE COST OF HOME-FED PORK**, or bacon, will generally be found to come to within 1½d. or 2½d. a pound of the selling price, varying of course, with the cost of the store-pig and with that of the feeding materials. Much will depend upon the degree of fatness required, the last part of the operation of fattening being much more costly than the first, and especially if prolonged through the winter months, as already observed in paragraph 1164. On the whole, there can be no doubt, from the experience of numbers of private families as well as cottagers, that when there are proper conveniences, moderate attention, *and a garden*, a pig or a couple of pigs may be kept with great advantage, and a profit to the amount specified above.

SECT. 3.—DAIRY PRODUCE.

1169. Three things are necessary to the proper management of the dairy, and these are—1st, *proper cows* fit to produce milk; 2nd, *a good pasture for them*, with *dairy* and *dairy utensils*; and, 3rd, an *experienced and industrious dairymaid* capable of good management of the cows.

SUB-SECT. A.—THE COW.

1170. Where only one or two cows are kept, especially where their pasture is limited in extent, it is very important to attend to the breed, of which some are much better than others for milking purposes.

When the cows of the neighbourhood are decidedly bad, it may be better to bring others from a distance; but, as a rule, it is better to select the best within reach, as experience shows that they are suited to the soil and climate, whereas strange breeds may, and often do, fail when removed to fresh pastures. If the pasture is good, there need not be so much care taken, as any cow will thrive there; but on inferior grass, a cow accustomed to rich feeding will fall away and give less milk than one accustomed to the locality, although in herself a much worse milker. But supposing the situation very confined, as in the neighbourhood of a town, it should be known that the Flemish cows will thrive well in confinement, even for a series of years, where those of the English breed would rapidly lose flesh and condition. Unless, therefore, there is good pasture and plenty of change, avoid the well-bred English short-horn, or the cross with any of the Channel Island cows; and select in preference a little French or a large Flemish cow, which may generally be procured in the London market, or in those of the large towns. The Jersey cow gives good milk, and is very profitable, as well as those of the adjacent islands of Guernsey and Alderney. The cross with the Durham is excellent for dairy purposes, when there is plenty of grass, as also is the old Dorset cow; but the Herefords, Sussex, and Devons are too much inclined to lay on fat to make them useful to the private cowkeeper, unless he makes up his mind to fatten them, and sell them off when half-dry. This is an excellent practice, in point of economy; but as private cowkeepers are apt to entertain the fancy of making pets of their animals, their feelings will often prevent this condemnation of a highly-prized favourite to the knife, as soon as she has made herself a place in his affections. Whatever be the breed or quality of the cow, she should have plenty of good food, in order to ensure a proper supply of milk. This food should be succulent as well as nourishing, the latter kind having a greater tendency to make fat than milk. A cow well fed may be safely milked to within a month of her next calving, but it is better to dry her for that time. It is usual in private families to keep two cows, one to calve in the spring, and the other in the autumn, so as to ensure a constant and tolerably uniform supply of milk. In purchasing the first cow, it is better to select one to calve in May, when the grass begins to be succulent; but afterwards they must be chosen so as to come in when the other is going dry. The system of stall-feeding is now very generally adopted, and is found to answer very well in small numbers; but when the cows are collected together in great dairies, disease is propagated from one to the other, and the consequence is that a frightful mortality often takes place. In selecting his cows for the dairy, the private individual who is a novice in these matters will always do well to consult some experienced cowkeeper, as there is a great art in detecting the signs by which a good milker may be known from a bad one, and a healthy from a diseased cow. The following rules, however, may assist the purchaser when he cannot obtain the above help:—

1171. POINTS DESIRABLE IN A COW FOR THE DAIRY.—*Head* large, muzzle coarse, ears pendent, and tinged yellow inside; *neck* long, slender, and tapering towards the head, but with little loose skin below; *chest* deep but narrow, and strikingly deficient in the substance of girth; *ribs* flat and wide apart; *back* narrow, joints wide and loose, bones prominent, hips narrow; *belly* large and drooping; *quarters* thin and firm; *legs* long, coarse, and sickle-hammed; *tail* set on low; *haunch* drooping; *udder* large, thin, and loose, and the milk-vein very prominent.

SUB-SECT. B.—THE PASTURE, DAIRY, AND UTENSILS.

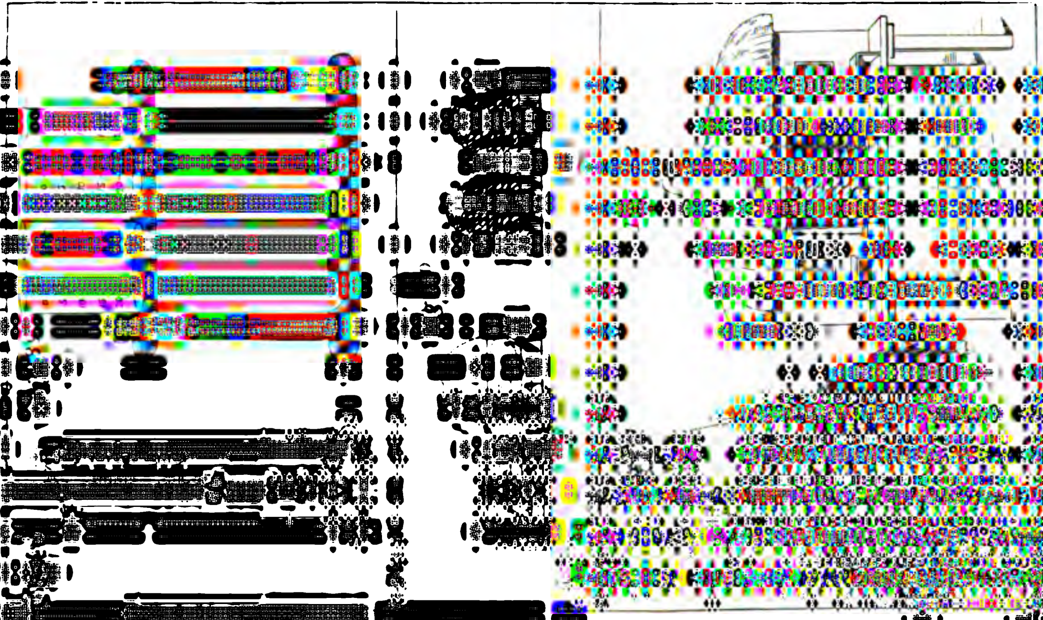
1172. THE PASTURE is of the greatest importance, as upon it will depend in great measure what kind of cow shall be selected, and what amount of milk, butter, and cheese may be reckoned on. With some kinds of pasture it is impossible to obtain either good butter or good cheese, and all that can be done is to use what milk and cream are wanted in the house, and sell the remainder, which is generally easily effected. When the grass is radically bad, and the landlord allows it, the better plan is to break it up, and plant it with lucerne, rye, Italian rye-grass, or some of the roots which must be given with hay. Lucerne gives a very good milk, and so do rye and Italian rye-grass, but nothing is equal to a good old pasture. When the land is poor, *but not wet*, there is no food so economical as gorse, furze, or whin—three names for the same plant. It must be bruised in a proper machine, to be obtained at the agricultural implement makers; and the quantity necessary for each cow on the average is three bushels and a half per day, mixed with four ounces of salt. In Mr. Spooner's farm, near Worcester, where this plan is carried out, the cows are allowed about four-and-a-half pounds of hay and twenty pounds of Swedish turnips in addition, and the produce is certainly of an excellent quality, and, I believe, in a remunerative quantity. The cows there have almost always been in good health, though stall-fed; but they are generally sold off after milking in a fat condition, for completing which the gorse is used, with the addition of a little oil-cake towards the last, beginning with four pounds and increasing it to twelve pounds per day for each cow. The gorse is first put through a common chaff-cutter, and then bruised in a mill similar to a cider-mill. It must be used when quite fresh, and at Mr. Spooner's farm, to avoid working on the Sunday, the cows are fed on other food on that day, which may be advantageous also in point of health. It is cultivated by sowing it with a crop of barley or oats, and it is fit to cut the second autumn after planting. It is then mown every year during the winter, as required, with a common scythe, close to the ground. A tolerably good soil, dry enough for this plant, will cut from seven to ten tons per acre; and the same land has been cut for fourteen years without loss of quantity or quality, but after that time it required to be given up and a fresh plantation made on other land, as the roots became decayed. The plant used is very common in England, but is called the French furze, and it grows well upon an old woodland, stocked up, such as is often useless for other purposes; but it must be dry. Half an acre of this land is, on the average, enough to keep a cow twenty weeks; on rich, loamy dry land a quarter of an acre will serve for the same period, so that an acre of land may be made to keep two cows for more than a year, though it is usual to give them grass in the summer. On the large scale, the mowing, carting, cutting, and bruising cost not quite a penny a bushel; but for small dairies the expense would of course be greater. As, however, this item is generally a part of the man's daily work, it is seldom taken into the calculation. Mr. Spooner's management of the gorse is as follows:—The quantity of seed used by him is 20 lb. per acre, sown broadcast; but he recommends it to be drilled as near in the rows as will admit of hand-hoeing for the first year or two, if the land is inclined to run to grass. It is not manured, though in its consumption it creates a great deal. When once sown and well rooted, it yields a great quantity of food for cattle, at no other expense but the cutting, bruising, &c. He generally begins to mow it as soon as the grass is gone, and it lasts till grass comes again. If there is a threatening of snow, he mows some quantity beforehand, as it will keep for some days unbruised. If, therefore, the private cow-keeper can manage to keep his couple of cows for half the year in this way, he will find that another acre and a half of good grass will suffice for the six summer months, or two acres in all, making a total outlay, besides labour, of the yearly value of the land—say £6. 6s. or about 1s. per week per cow, a sum which will barely give a quart of milk per day when purchased of the milkman, instead of five quarts, which is the average quantity to be obtained from each cow, one of which will be always getting dry or quite so, and the other either in full milk or nearly so. Under the ordinary method of feeding cows—that is, with grass and hay, each will require on the average from two to three acres of land, taking into consideration the hay, straw, &c., which she consumes; or, if stall-fed on hay, grains, turnips, mangel-wurzel, &c., she may be said to consume the produce of one to one and a half acre; so that the plan of feeding on gorse, when properly carried out, effects a saving of 50 per cent. The late Mr. Cobbett published a plan by which a cow could be stall-fed on the produce of a quarter of an acre during the entire year; but I believe in practice this is found to be impossible, unless the land is peculiarly rich and far above the average; and the above is the usual amount required.

1173. THE DAIRY has been described already, at page 155; but in many small families a much more simple arrangement is made, the milk being kept in a room in the house called "the dairy," though rarely deserving of that name. When, however, there are not the means, the best plan is to do the utmost towards what is good, and then the dairymaid, who is generally also the cook, must contrive to scald her vessels in the scullery, and make her butter there also, using the dairy only for storing her milk, cream, and the butter.

1174. THE UTENSILS FOR AN ORDINARY PRIVATE DAIRY are—1st, the *hydrometer* and *lactometer*, to judge of the richness of the milk of each cow; 2nd, the *milking-pail* or *pails* and *stool*; 3rd, the *pans* for storing the milk; 4th, the *cream-pan* and *skimmer*; and 5th, the *churn*, or, for Devonshire butter, the *hand-tub*. The *hydrometer* is an instrument by which the specific gravity of milk, or any other fluid, is ascertained—that is to say, the quantity of water in it; since the instrument really shows the difference between the milk and pure distilled water. All milk is composed of water in which are suspended casein (or cheesy matter), butter, milk-sugar, and various salts;—the proportion of water in 100 pints being 87, and as the specific gravity is increased in a ratio to the quantity of these solid materials, so the number indicating it marks their amount. The instrument (see *fig.* 88) consists of a glass tube, with a bulb at its lower extremity, in which is a little mercury so adjusted that it will make the mark 0 on the scale float exactly level with the surface of distilled water. When the jar accompanying it is nearly filled with the milk to be examined (taking care to shake up the cream just before doing this), the instrument rises in proportion to the density, and by casting the eye along the surface of the milk, the number on the scale on a level with it will indicate the exact specific gravity. The ordinary specific gravity of new cow's milk, at 50 Fahrenheit, is said to be 1031; but this is no test of the cream, which is very variable, and in many cases the specific gravity of the skim-milk is greater after skimming than before. As a test for *curd* it is, however, of great value; but for measuring the cream the best instrument for ordinary use is the *lactometer* of Sir Joseph Banks (see *fig.* 89). Three or four glass tubes, about a foot high, divided into 100 parts, and graduated near their upper ends, are loosely supported in a wooden stand, and filled with the milk warm from the cow, one being devoted to each sample to be examined. The scale is generally extended down one-fifth of the tube, and this will almost always suffice; but in some cases the amount of cream is much greater than this. After standing twelve hours, the cream has all risen to the surface, and the figure opposite its *lower* edge marks the per centage of cream to milk. Thus, supposing it stands at the figure 10, then there is 10 per cent. of cream; or, if at 5, then only 5 per cent., and so on. The average of cream appears to be about 8 or 9 per cent., but in different breeds and pastures it will vary greatly from that amount. Provided with these two instruments, one of which measures the amount of curd, and the other that of cream, the cow-keeper will be able to ascertain whether the cows which he has are worth keeping, or whether he shall make an attempt to better himself by getting rid of them and purchasing others. The *milking apparatus* consists of a low stool, usually with three legs, to adapt itself to the unequal ground on which the milking takes place; and a small pail, which may be of wood or tin. In winter, the former is preferred, because it does not chill the milk so much as metal; but in summer, the latter is less liable to absorption and decomposition, and therefore keeps it sweeter. The *pans* are, for the ordinary method, large and shallow, and either of metal, glazed earthenware, or glass. For the Devonshire mode, an earthen pan is used at least a foot deep, so as to allow of a great thickness of cream collecting. In either case, a *strainer* is required to pass the milk through before setting it by for the cream. The *cream-pan* and *skimmer* are merely for the purpose of collecting the cream from the milk. The former is a deep earthen pan, calculated to hold enough for one churning, which will vary with the number of cows. The skimmer is a large and somewhat flat spoon, used to collect the cream without breaking its head more than necessary, that is, so as to leave none behind. The *churn* varies considerably in make, but the principle is the same in all. Butter consists of cream, in which the globules have been broken by agitation, and that churn is the best which will effect that object in the best manner. There are three principal divisions in the kinds of churns, one, in which a fixed vessel receives the cream, which is broken up by a plunger worked up and down in it; this is called the *plunging churn*; a second, which is that most commonly adopted in English dairies, and called the *barrel churn*, is rotated by a handle, so that the cream is made to fall over projections in its interior, as it goes round; while in the third, or *new patent churn*, the barrel is stationery, but has a revolving kind of paddle worked through the cream contained in it. In the Devonshire method, the cream is beaten with the hand in a common small wooden tub, until it is converted into butter.

SUB-SECT. C.—THE DAIRYMAID, AND HER MANAGEMENT OF THE DAIRY.

1175. THE DAIRYMAID in small families is usually also the cook; but she should in that case, as well as in that of the servant devoted entirely to this kind of occupation, be *scrupulously clean*. Without this accomplishment, it is in vain to expect good butter or cheese; nor will the milk even keep sweet in warm weather, the slightest remnant of the old milk being enough to develop the acetous fermentation. In addition to this cardinal virtue, punctuality is very important, both in milking the cows and in all other dairy operations. If these animals are not regularly milked they are uneasy, and the moment this is the case, the quality of the milk suffers. Sometimes the milking is done by a man or boy; but in many cases the female servant has this task, which requires considerable knack; and it is a fact, that a good milker will always get more milk, with less trouble also, than a clumsy one. The hours of milking should be early in the morning and as late in the evening as can be conveniently arranged, the object being to give the milk as much cool air as possible during the time of its



[illegible] 6, 352.

throwing up the cream. The dairymaid should be careful always to drain the udder perfectly; the habit of leaving milk in it is greatly injurious to both the health and productiveness of the cow, besides being extremely wasteful; every succeeding drop being richer than the one before it, and the last half-pint giving twelve times as much butter as the first. The dairymaid should not only be a skilful milker, but also perfectly good-natured; a gentle hand is the most successful, and usually women milk better than men. The quantity of the milk depends on many causes: as, the goodness, breed, and health of the cow; the kind of pasture, and the opportunity for its frequent change, which has also a tendency to increase the milk; the length of time from calving; the having plenty of clean water in the field she feeds in. &c., &c. Those who attend properly to the dairy will feed the cows particularly well two or three weeks before they calve, which makes the milk more abundant. Cows should be carefully treated; if their teats are sore, they should be soaked in warm water twice a day, and either be dressed with soft ointment or with spirits and water. If the former, great cleanliness is necessary, and the milk at these times should be given to the pigs.

1176. THE MANAGEMENT OF THE MILK IS AS FOLLOWS:—When the milk is brought into the dairy, it should be strained and emptied into clean pans, immediately in winter, *but not till cool* in summer. White ware is preferable, as the red is porous, and cannot be thoroughly scalded; metal is selected by some people, and zinc in particular, in the belief that it throws up the cream. During summer, skim the milk either before the sun has heated the dairy, or after its effects are gone off; at that season it should stand for butter twelve hours without skimming, and twenty-four hours in winter. Deposit the cream-pot in a very cold cellar, if the dairy is not cool enough; and if churning cannot be managed change it into fresh-scalded pots; but never omit churning twice a week. The cream must be strained into the churn through a fine sieve or linen cloth.

1177. WHEN A CALF HAS TO BE REARED, it should be taken from the cow in a week at farthest, or it will cause great trouble in rearing, because it will be difficult to make it drink milk in a pan. Take it from the cow in the morning, and keep it without food till the next morning; and then, being hungry, it will drink without difficulty. Skimmed milk and fresh whey, just as warm as new milk, should be given twice a day in such quantity as may be required. If milk be scarce, smooth gruel mixed with milk will do. At first, let the calf be out only by day, and feed it at night and morning. It is usual at first to give the calf a finger dipped in the milk to suck; but it may soon be taught to drink of itself. To teach it to eat, a piece of fine hay is loosely tied round with a string, and suspended over the crib in which the calf is kept. It will attempt to suck the hay, which will then come out into its mouth, and the instinct of nature will teach it to eat.

1178. BUTTER-MAKING, by the ordinary method, consists in pouring the cream into the churn, or sometimes the raw milk as it comes from the cow. The former is, however, the preferable method. The cream from day to day, is usually set apart till the churning day, in a bowl for the purpose; but in some dairies each skimming is kept separate. By the third day, a slight acidity is developed, and that is rather conducive than otherwise to the production of good butter. Great care is requisite to keep the churn at an average temperature of 50 degrees Fahrenheit; and if the weather is cold, the room in which the churning is carried on must be warmed to nearly that point. The churn must always be well scalded out before putting in the cream, to prevent the butter from adhering to it. In winter warm the churn, and in summer cool it; and let the cream be exactly 50 degrees by the thermometer. If the cream is 10 degrees more than 50, you lose [illegible] lb. out of 80, and so in proportion; besides that, it does not keep so well, and as it does not begin to turn till 50 degrees of heat, if you put it in cooler than that you have to turn the churn till it acquires that heat before it begins to have any effect. The butter is seldom longer than an hour in coming when this plan is adopted. Butter is not so good if it comes in less than three-quarters of an hour. When the butter is come, pour off the buttermilk, and put the butter into a fresh scalded pan, or into tubs, which have, after scalding, been in cold water. Pour water on it, and let it lie to acquire some hardness before you work it; then change the water, and beat it with flat boards so perfectly that not the least taste of the buttermilk remains, and that the water, which must be often changed, shall be quite clear in colour. If any of the milk be left in the butter it will speedily injure the flavour by the fermentation to which it is disposed. The butter must then be salted, in the proportion of half a pound of salt to fourteen pounds of butter. The salt must be of the finest kind, and must be perfectly blended with the butter, either by skilful beating with the hand, or, in summer, it is more advisable with two wooden spatulas. There is no one article of family consumption much in use of greater variety in goodness, or that is of more consequence to have of a superior quality than this; and the economizing of it is most necessary. The sweetness of butter is not affected by the cream of which it is made being turned. When cows are in turnips, or eat cabbages, the taste is very disagreeable; and the following ways have been tried with advantage to obviate it:—When the milk is strained into the pans, put to every six gallons one gallon of boiling water.—*Or*, dissolve one ounce of nitre in a pint of spring water, and put a quarter of a pint to every fifteen gallons of milk.—*Or*, when about to churn, keep back a quarter of a pint of the sour cream, and put it into a well-scalded pot, into which the next cream is to be gathered, and stirred well, and the same is to be done with every fresh addition. When the firm compact mass of butter is completed, it may either be potted in earthenware basins or made into rolls, forms, or pats, for immediate use.

1179. THE FOLLOWING OBSERVATIONS ON BUTTER-MAKING are from a noted Herefordshire dairywoman, and have proved exceedingly useful in several instances where they have been carried out:—"If the butter comes in grains, let out some of the buttermilk, and churn it again; it is generally good in that case. When the butter is salted, washed, and still in water, weigh it, and put it in water in another vessel; make it up, and put it in fresh water, and in hot weather change the water three or four times. The dairymaid should not touch the butter in the churn with her hand but should collect it with the churn-stick; then put cold water, and churn it round; put fresh water, and let it remain a little till she is ready to make it up. In summer she should put about one quart of cold water to as much cream as will make three or four pounds of butter when put into the churn; and in winter put from half a pint to a pint of hot water in, to make it the heat of new milk. If the weather is very severe, the cream should be put within airing distance of the fire, with a dish and cloth covering it, the night before churning. A tea-spoonful of crystalized saltpetre should be put into the cream-bowl before beginning to gather the cream at all times; if the cows have turnips, put more. When the hands are once seasoned to make the butter up, never leave off till it is done. The churn should always be washed the moment the butter is out, and nothing but water should be used for the inside. Wooden vessels used in the dairy should be cleaned with lime or sand, rubbed on with a whisp of straw, and scalded in a copper twice a week; earthen vessels should be rubbed with wood-ashes, and then boiling water poured over them. The butter is better when you skim the cream off every twelve hours, though the quantity may not be so great. A hand-churn is best; and one large enough for two cows will do equally well if one only is kept. In winter put into the churn about three gallons of boiling water, and let it remain in five minutes to warm the churn, thoroughly turning it round; in summer rinse the churn out twice with cold water. If, after churning two hours in winter, the cream does not come, put in two quarts of hot water; in summer, if, after long churning, it gets thick, and does not separate, put in two quarts of cold water. At all times the churn should be turned quickly at first, and slowly afterwards. When the butter is come, it should be pressed against the sides of the churn, and taken out and laid either on a slate, such as is used for making pastry, or a thick firm table, and beaten two or three times over with the knob before the salt is put to it, and afterwards, till not a drop of buttermilk remains in it. It is then ready to make up; the hands of the person to do this should be washed perfectly clean, then put into hot water, or rubbed over well with salt, then put into cold water; this prevents the butter sticking to them; and the knife, and whatever wooden things are used, should be prepared in the same way." I have known several cooks make excellent butter, by attending to these rules, who have had no former experience.

1180. THE DEVONSHIRE MODE of making clotted cream and butter is as follows:—In winter, let the milk stand twenty-four hours; in the summer, twelve at least. Then put the milk-pan on a hot hearth, if there is one; if not, set it in a wide brass kettle of water, large enough to receive the pan. It must remain on the fire till quite hot, but on no account boil, or there will be a skin instead of cream upon the milk. It may be known when it is done enough by the undulations on the surface looking thick, and having a ring round the pan the size of the bottom. The time required to scald cream depends on the size of the pan and the heat of the fire; the slower the better. Remove the pan into the dairy when done, and skim it next day. In cold weather it may stand thirty-six hours, and never less than two meals. The butter is usually made in Devonshire of cream thus prepared, and if properly done it is very firm; though more like cream than butter in flavour. It is made readily enough by beating the thick cream in a tub with the hand, previously scalded and soaked in water. In a very short time the cream is converted into butter, and there is a very small quantity of well-flavoured butter-milk, much richer than that obtained in the ordinary way.

1181. To Season the Wooden Skimming-dish, &c.—Rub it over with suet, place it in cold water all night, and next day put it in the boiling copper. For a new churn, soak it in lukewarm water some hours, then put in wood-ashes and boiling-water. To clean a churn, put cold water in and churn it about; afterwards put boiling water in, cover it down close, and let it stand ten minutes, then churn it about, and empty.

1182. To Remove the Taste of Turnips from Milk.—One pound of saltpetre to one gallon of boiling water; bottle it, and add one pint and a half to twelve gallons of milk when it comes from the cow.

1183. To Keep Cream for Travelling, &c.—Put two or three lumps of sugar in it; and, better still, boil it first.

1184. Butter is preserved for winter consumption by salting it more or less, the latter called *potting*. From one to two ounces of salt per pound will keep it through the winter; but if it is intended to last over that time, a larger quantity is required. Great care should be taken to keep out all air bubbles by pressing and working the butter smoothly down in the jar or tub. Sometimes sugar and nitre are mixed with the salt, in the proportion of two ounces of salt to one of each of the two other ingredients; an ounce of this mixture, finely powdered, is rubbed up with each pound of butter.

1185. The Swiss Method of preserving butter without salt, as recorded by Sir John Forbes, is as follows:—"A narrow deal board, not more than four or five inches wide, is fixed horizontally in an open place in the dairy of the chalet; wooden pins, from two to three feet in length, are fixed in an upright position into this, their whole length projecting above its surface. As the butter is made, it is placed daily round these pins (one at a time), beginning at their lower end, and in a mass not exceeding, at first, the width of the board. Every day, as more butter is made, it is added to the previous portion around the pin, the diameter of the growing mass being gradually enlarged *upwards*, until the upper surface overhangs the base to a considerable extent, like an inverted bee-hive. When one pin is filled, another is proceeded with in like manner, and so on. The exposed surface of these masses gets soon covered with a sort of hard film, which effectually excludes the access of the air; and this circumstance, with two others, namely, the complete expression of milk from the butter, and the unobstructed circulation of a cool mountain air through the chalet, will go far to explain how butter so treated can remain so long without being spoiled." Sir John Forbes remarks, that he should like this plan to be tried in an English dairy with the above provision; but how we are to meet with a cool mountain air circulating freely in one, I am at a loss to know. Perhaps in the high districts of Wales or Scotland, such an experiment might be tried with advantage.

1186. To Keep Milk and Cream.—In hot weather, when it is difficult to preserve milk from becoming sour, and spoiling the cream, it may be kept perfectly sweet by scalding the new milk very gently, without boiling, and setting it by in the earthen dish or pan that it is done in. This method is pursued in Devonshire for cream to be made into butter, and would equally answer in small quantities for that intended for coffee, tea, &c. Cream already skimmed may be kept twenty-four hours, if scalded, without sugar; and by adding to it as much powdered lump sugar as will make it pretty sweet, will be good for two days, keeping it in a cool place.

1187. In Making Cheese, the milk is coagulated with rennet, the juice from the stomach of the calf, or, in some cases, of the turkey or lamb, and acts by the remnant of the gastric juice which it retains. A calf's stomach is salted, and preserved till wanted, when a piece is soaked in water, and of this infusion a pint will turn forty or fifty gallons of milk. The *cheese-tub* is a vessel in which the rennet is added to the milk, and in which it remains, being well stirred together, and, if necessary, coloured with annatto or carrot-water. In a couple of hours, or less, the curd is well formed, and it is then taken out and conveyed to the *cheese-vat*, the whey being given to the pigs. In this it is broken up by the hand, and afterwards a heavy weight put upon it, by which the superfluous whey is got rid of; and then it has only to be pressed, salted, and dried, in order to make good cheese. This will be more readily understood from the following receipts. Cheese made on the same ground, of new skimmed or mixed milk, will differ greatly, not in richness only, but also in taste. Those who direct a dairy in a gentleman's family should consider in which way it can be managed to the best advantage. Even with very few cows, cheeses of value may be made from a tolerable pasture, by taking the whole of two milkings, and proportioning the thickness of the vat to the quantity, rather than having a wide and flat cheese, as the former will be most mellow. The addition of a pound of fresh-made butter, of a good quality, will cause the cheese made on poor land to be of a very different quality from that usually produced by it. A few cheeses thus made, when the weather is not extremely hot, and when the cows are in full milk, will be very advantageous for the use of the family. Cheese for common family use will be very good when made by mixing two milkings of skim, and one of new milk; or, on good land, by skim-milk only.

1188. To Prepare the Rennet.—Take out the stomach of a calf as soon as killed, and well scour it inside and out with salt, after it is cleared of the curd always found in it. Let it drain a few hours; then sew it up with two good handfuls of salt in it, or stretch it on a stick, well salted; or keep it in the salt wet; when wanted, soak a bit, which will do over and over again by using fresh water.

1189. To Make Common Cheese.—Put the milk into a large tub, warming a part of it till it is of a degree of heat quite equal to new, or 90 degrees Fahrenheit; if too hot the cheese will be tough. Put in as much rennet as will turn it, or about one dessert spoonful to a gallon, and cover it over. Let it stand till completely turned; then strike the curd down several times with the skimming-dish, and let it separate, still covering it. There are two modes of breaking the curd; and there will be a difference in the taste of the cheese, according as either is observed; one is, to gather it with the hands very gently towards the side of the tub, letting the whey pass through the fingers till it is cleared, and lading it off as it collects; the other, to get the whey from it by early breaking the curd. The last method deprives it of many of its oily particles, and is therefore less proper. Put the vat on a ladder over the tub, and fill it with curd by the skimmer; press the curd close with your hands, and add more as it sinks; and it must be finally left two inches above the edge. Before the vat is filled, the cheese-cloth must be laid at the bottom; and when full, drawn smooth over on all sides. There are two modes of salting cheese—one by mixing it in the curd while in the tub, after the whey is out; and the other by putting it into the vat and crumbling the curd all to pieces with it, after the first squeezing with the hands has dried it. The first method appears best on some accounts, but not on all, and therefore the custom of the country must direct. Put a board under and over the vat, and place it in the press; in two hours turn it out and put a fresh cheese-cloth; press it again for eight or nine hours; then salt it all over, and turn it again in the vat, and let it stand in the press fourteen or sixteen hours, observing to put the cheese last made undermost. Before putting them the last time into the vat, pare the edges if they do not look smooth. The vat should have holes at the sides and at the bottom, to let all the whey pass through. Put on clean boards, and change and scald them. In some of the large dairy farms in Gloucestershire a quantity of the butter is made from the whey, which is sold to the poor at a low price, and is much liked by those who are accustomed to it.

1190. To Make Stilton Cheese.—Put the evening's milk into shallow pans to throw up the cream; in the morning drain off about three parts of the thin milk from below, and take what remains with the cream and mix it with the morning's meal of milk. Warm it to the usual degree for cheese, and put in a small bit of rennet, about half as much as for common cheese. It will take proportionably longer to form the curd (say eleven o'clock). Scald and clean the pans you have taken the cream from, and lay full-sized cheese strainers in them: and as you take the curd from the tub, lay it on these cloths, and tie the corners over, but not tight, leaving the whey to drain quietly off till the evening, by which time it will probably have set into a sufficiently solid mass, and may be turned out into milk-pans (pancheons); but if the whey has not all come away, the cloths may be tightened a little, and left till morning, when it should be turned into the pancheon, and with a clean knife cut across both ways, in pieces about three inches broad. Set the pancheon on a table, where also place your cheese vat (a deep tin with holes at the sides on a board to fit it). Take up one of the pieces of curd in your hand, break it moderately small, and lay it lightly in the vat, then take a small handful of salt and sprinkle over it; then another lump of curd, and salt again, and so on till you have heaped up as much as the tin will hold without pressing it. Put no weight at all upon it. The salt will cause more whey to run out, and by next day the curd will have sunk down level, or within the tin. Turn it over, and let what was top yesterday be now underneath; or if you had not sufficient curd to fill it at first, you may now fill it, and let it stand another day. The day after it has been turned over, turn upon a cloth strainer; then lift off the tin, warp calico round the cheese, and slip the tin over it again. Repeat this five or six days, changing the cloth daily as long as any moisture drains from the cheese, and taking care each time to let it stand on the *other* end. At the end of the time the cheese should be firm enough to stand, and the tin may be dispensed with; but it will be desirable to pin a cloth round it for a few days longer. Excepting in very hot weather, there should be a fire in the room in which the cheeses are kept. They are more easily made of new milk, though, of course, not so rich tasted.

1191. To Make Yorkshire Blue Milk Cheese.—This cheese is still used in Yorkshire, to send out into the fields with bread and ale, for the refreshment of the agricultural labourers. The dairywoman who makes this cheese is expected to be at work by four o'clock in the morning, as, in summer, by a few hours later the skimmed milk would be turning sour. The milk is placed in the cheese-kettle, and heated to blood heat; the practised dairywoman ascertains this by her hand; but the more accurate method is to raise the temperature to 90 degrees. The rennet is then added, and as soon as curd is found, it is removed into a perforated butter-trough, when the whey is drained off, and the process of making the cheese proceeds in the ordinary way. (See par. 1189.)

1192. To Make Sage Cheese.—Bruise the tops of young red sage in a mortar with some leaves of spinach, and squeeze the juice; mix it with the rennet in the milk, more or less, according to the preferred colour and taste. When the curd is come, break it gently, and put it in with the skimmer, till it is pressed two inches above the vat. Press it eight or ten hours. Salt it, and turn every day.

1193. To Make Cream Cheese.—Put five quarts of strippings, that is, the last of the milk, into a pan with two spoonfuls of rennet. When the curd is come, strike it down two or three times with the skimming-dish just to break it. Let it stand two hours, then spread a cheese-cloth on a sieve, put the curd on it, and let the whey drain; break the curd a little with the hand, and put it into a vat with a two-pound weight upon it. Let it stand twelve hours, take it out, and bind a fillet round. Turn every day till dry from one board to another; cover with nettles, or clean dock leaves, and place between two pewter plates to ripen. If the weather be warm, it will be ready in three weeks.

Another Mode.—Have ready a kettle of boiling water, put five quarts of new milk into a pan, with five pints of cold water and five of hot; when of a proper heat put in as much rennet as will bring it in twenty minutes, likewise a bit of sugar. When come, strike the skimmer three or four times down, and leave it on the curd. In an hour or two lade it into the vat without touching it; put a two-pound weight on it when the whey has run from it, and the vat is full, then proceed as above.

1194. To Make Rush Cream Cheese.—To a quart of fresh cream put a pint of new milk, warm enough to raise the cream to 90 degrees Fahrenheit, with a bit of sugar, and a little rennet. Set near the fire till the curd comes; fill a vat, made in the form of a brick, of wheat-straw or rushes sewed together. Have ready a square of straw, or rushes sewed flat, to rest the vat on, and another to cover it, the vat being open at top and bottom. Next day take it out, and change it as above, to ripen. A half-pound weight will be sufficient to put on it.

1195. To Make Curds and Whey Immediately.—Into a glass of new milk put half a teaspoonful of solution of citric acid. The milk will be curdled immediately, and the whey clear and acid.

Sect. 4.—Bee-keeping.

1196. Bees are kept for the purpose of making honey, either for home use or for sale, by which last plan the poor man may realize a considerable sum during the year. Cobbett asserted, in his off-hand way, that a hive of bees produced honey yearly to the value of two bushels of wheat, which, at the present prices, would be 17s., or equivalent to about 30lb. of honey, a large *average* produce of each hive. The editor of the *Family Economist* begins his account of bees by stating, that a bee-keeper may "realize £10 to £15 a year by the culture of bees on a moderate scale." In a recent little work on bees by Mr. Wood, published by Messrs. Routledge, one bee-keeper is stated to have "made £20 a year for three successive years;" and another "cleared nearly £100 in one year by bees." He also says, that "fifty or sixty pounds (of honey) have not unfrequently been obtained from a single hive in a season, and occasionally as much as 100 lb., whilst from a set of collateral boxes 110 lb. is mentioned; and Cotton states, that as much as 210 lb. have really been stored in a single season by a single stock similarly situated in a roomy trebled habitation." These statements are, I believe, somewhat exaggerated; but, nevertheless, as the profit is considerable, *when compared with the outlay*, bee-keeping is well worth the attention of the man who has little or no capital to lay out in a more profitable speculation.

Sub-sect. A.—Method of Obtaining.

1197. Bees are obtained by purchase of a hive or swarm, which should be effected in spring. A recently-settled swarm in a new hive should be selected, weighing not less than four or five pounds, and costing on the average 10s.; a second and later swarm is not so valuable, and seldom weighs more than half the above weight. If the attempt to begin keeping bees is made in the autumn, a hive full of honey should be bought; but even then it should be a swarm *of the same year*, and should weigh from 25 lb. to 30 lb., costing about 20s. To remove this to your own premises is the next thing, and this requires the hive to be loosened from the footboard and supported on some little blocks of wood a few hours before the intended operation. Then take a board and lift the hive quickly, yet steadily, upon it, closing the usual orifice by a piece of fine perforated zinc. If very full of honey, the whole may be now inverted to avoid detaching the combs, and in either case it may be carried by hand to its new resting-place, where it is to be steadily deposited, and, after a few moments, the zinc withdrawn.

SUB-SECT. B.—HIVES AND THEIR MANAGEMENT.

1198. THE ORDINARY STRAW HIVE is all that is really required; and even with this alone all the honey may be saved which the bees can spare, without any unnecessary loss of their lives by smoking. Various other hives are used by some bee-keepers, on the principle of excluding the bees from certain parts and admitting them to others, by altering the amount of heat and ventilation; but this may equally be effected on the plan which will be presently described with the common straw hive, protected only by a covering, or small shed, from the weather.

1199. THE USUAL MANAGEMENT OF BEES in England is that of annual destruction and renewal, which is a very extravagant plan, and objectionable, also, on the ground of needless cruelty. In other countries it is the custom, and gradually becoming so in this, to take a part of the produce, and leave the remainder for the winter sustenance. For this purpose, some place one hive upon another, and in the autumn remove the upper one; others turn out their hives, and cut out as much honey and comb as they think the bees can spare. In either way, from 20 lb. to 30 lb. of honey are obtained from each hive, while the stock of bees is reserved for the next year. Cobbett was of opinion that the bees, if saved, would die of old age the next year; but this is now proved to be a fallacy, and has led to the sacrifice of many millions of bees unnecessarily. In England the heaviest and the lightest stocks are every year chosen for destruction, and the bees smoked; so that, if twenty stocks are in existence, ten are taken, and ten left for next year, altogether producing, we will say, 300 lb. of honey. The foregoing method would give 400 lb., on the average of 20 lb. per stock; but both may be, and are, improved upon in England by the method at present adopted among some few intelligent beekeepers, one of whom, celebrated for his skill in this department, has laid it down as a rule that *bees should never be killed.* Prevention of swarming is the grand principle upon which this plan is conducted, and it is effected by giving them increased room as fast as they require it. The queen bee lays from 10,000 to 20,000 eggs annually, which must first be provided for by the working-bees, after which they store honey as fast as they can. But when a swarm goes off, they have no time to gather honey for more than their own winter wants; and very often, in a bad year, a stock full of bees will be without any of their natural food. If, however, the swarming is prevented, the bees which nursed the grubs in the early part of the season are sufficient to do the whole work of the hive in that respect, and the others lay up honey rapidly without loss of time. In order to give the spare room which is required to prevent this swarming, if the bees are in straw hives, proceed as follows:—Procure two boards an inch and a half thick, or perhaps a little more, and of a size a little larger than the base of the hives. Cut a sloping way out of two adjoining sides, the breadth of the mouth of the hive, and reaching from that part to the edge of the board. These roadways have two purposes—first, they serve to drain the hive of all superfluous matter; and, secondly, they serve, by juxtaposition, to effect a means of communication between the two hives. (See *fig.* 90 A, showing the boards ready prepared.) Before swarming time, a hive full of honey is to be placed on one of these, and an empty hive on the other, with a piece of wood covering the narrow vacant space between them (see *fig.* 90, B). Next, stop up the door-way of the full hive, so that the bees cannot avoid passing out through the empty one, and shift both on the foot-board, until the new entrance is opposite the situation of the old one, when, by sprinkling a little honey, the bees soon become reconciled to the change. In this way, double the former room is given, while the queen and her nurses set to work to rear a fresh brood, and the honey-storers fill the new hive with honey. When this last also is filled, it must be removed in the following way:—A fine day should be selected for this purpose, when most of the bees are out at work; then cut off the passage between the two hives by slipping a piece of metal or wood between them. Slip the old entrance back to its old place, and stop up the new one. At this time, if there is a great commotion in the new hive, it is a sign that the queen is there, and it is necessary to postpone the removal till she has left it, in which case the separation must be removed. But usually she is in the old hive, and no notice is taken of the change in that case, and the two may be left quiet till the evening, when, a little before dark, the entrance to the new hive may be opened, and the imprisoned bees immediately fly out to seek their queen, and find their way to the old hive. The new one may now be removed with its contents, substituting another empty one in its place, and treating that exactly as was done before. In this way a hive full of honey is obtained early in the summer, without destroying a single bee, and with the prospect of obtaining a second store before the end of the season. But, in order to *ensure* the continuance of the queen bee in the old hive, it is only necessary to keep down the temperature of the new one by ventilation, which is effected by introducing a piece of perforated zinc in the top of the straw hive. No queen bee will lay her eggs in a temperature below 80 degrees, and if the new hive is maintained beneath this there is no danger of any such result. She will, on the contrary, in that case remain in the old hive to lay her eggs, where the workers also will deposit the pollen from the flowers to form the bee-bread for the grubs, while in the ventilated hive nothing will be stored but the finest wax and honey. The holes of the zinc will however be constantly filled up by the bees, and must be as regularly opened with a sharp instrument. A *modification* of this plan, suitable to weak hives, consists in placing a ventilated glass, or flower-pot, on the top of the hive, and opening a communication with this. If the glass is used, it must be shaded from the light by a straw cone. *Fig.* 91 shows this in operation; and for its effective working it is only necessary to fix a thick board on the top of the hive communicating with it by a central hole (*a*); around this are ranged other holes, bored obliquely outwards, and stopped with perforated plates, but so as to admit a current of air which passes out through the top of the glass or pot (*d*); this keeps the temperature low enough to prevent the queen from entering the glass. The bees will, also, here stop up the small holes; but they may easily be kept open by passing a piece of wire. The outer holes require stopping with corks in cold weather, or until the bees begin to work. In a good season this pot will be filled with honey in a week, and may then be removed by carefully slipping *two* pieces of mill-board or metal between it and the board, and then removing the pot with one and leaving the other to cover the hole. If this is done in the evening, and the pot is placed bottom upwards, without the cover, near the mouth of the hive, and tapped occasionally with a long stick, the bees all come out of it and pass into the hive, upon which the honey may be removed, and the pot, or a fresh one, replaced; allowing the bees to enter it as before, by sliding the piece of metal away.

1200. A Box, or Wooden Hive, is preferred by some people; but it is, I believe, inferior in every respect to the straw hive on the above principle, being hotter in summer and colder in winter than that material. Nevertheless, if wooden boxes are preferred, they may be made on the same principle as before mentioned, with a greater facility of effecting the communication between the two hives, because the two sides being perpendicular, it is only necessary to place them with corresponding holes, and the object is effected.

1201. Compound Hives are constructed nearly on the principle of those described in the last two paragraphs, but with slight differences in the detail. They are of three kinds—1st, the *ascending*; 2nd, the *collateral*; 3rd, the *descending*, or Nadir hive. The ascending and descending hives give increased trouble to the bees, because they have a long transit to pass through the body of the hive before they reach that in which they are to deposit their honey, and this is the chief defect of that described in par. 1199. The collateral hive is therefore the kind which is best adapted for the purpose, but it is complicated and expensive as designed by Mr. Nutt, and not always answering the purpose for which it is designed. In it, as in the previously-described hives, the ventilating principle is the grand secret; and in all cases the queen bee will deposit her eggs in the hottest part of the whole apparatus, which in it is the central box, or "pavilion," as he terms it. Here are the brood-combs, which are always kept warm, while the side boxes are ventilated beyond the control of the bees, and in them the honey and wax are deposited. By a proper management of the numerous slides and connections, the bee-keeper can force his bees to work when he likes, and can remove his honey without destroying a single bee; but it requires constant watching, without which, in this changeable climate, the temperature is reduced too much, and the bees refuse to work. At all events, in practice it is found that, even with the most careful supervision, such accidents as a barren hive or a swarm in the side boxes occasionally occur.

1202. **Mr. Grant's Hive** is the best of all, being a modification of the straw hive, and the collateral boxes in his plan are useful appendages to it. *Fig.* 92 shows this hive, with its entrance at the bottom, and a projecting footboard or landing-place under cover of the portico, so that when the bees hurry home in numbers, on the approach of rain, they may not be drenched while waiting to enter. The compartments at the sides are moveable boxes, about ten inches square, and one inch thick, with a glass window, closed by a shutter, to each. These are better placed at the back, so that the observer may be out of the way of the bees; and if they are made large enough to enclose straw hives, it will be all the better. Each box has its own separate entrance and footboard; and to each, as well as to the hive, may be affixed a bell-glass, as in par. 1199. A moveable roof, light and warm, covers the whole, and is taken on and off without difficulty. A tube of communication, which can be opened or closed at pleasure from the outside, extends from the central hive to each side box, so that the bees can pass freely when the owner pleases, and the whole may be treated like the hive alluded to in par. 1199.

1203. **The Situation** chosen for bees should be dry and airy, yet well protected from the prevailing winds. A canopy should be provided, with an end guard from the wind as well; but damp is the worst enemy of all. The footboard should be securely fixed upon one or more strong posts, which should be kept well tarred to prevent the incursions of the ant, and protected by an overhanging piece of metal, to keep off mice and rats.

1204. **Honey-taking and Swarming** require some little experience, not only to know *how* to effect the object, but also *when* it should be attempted. Two things are to be considered—1st, to obtain as much honey as possible, without injury to the bees; and, 2ndly, to insure the proper number in the swarm against the next year. If, however, the honey is taken too soon, the bees will be checked in their labour; and if the swarms are multiplied it will be at the expense of the honey. The bee-keeper will therefore make a compromise, founded on experience, which tells him exactly how to balance the two so as to obtain as much honey *in a series of years* as can possibly be effected. It is very difficult to estimate the quantity of honey made in a given time, but supposing the cap (see par. 1199) to be used upon the hive of Mr. Grant, it will be found that nearly one pound per day will be deposited altogether in each hive up to the end of July—that is to say, for about six weeks, after which, in most seasons, they will require to be allowed to lay up their winter's store.

1205. **Fumigation**, I have shown, should never be practised under ordinary circumstances; but if the hive is a single one, and it is supposed to contain more honey than will be required for the winter, the plan of fumigation may be tried with the intention of cutting out part of the honey. There are several substances which stupefy the bee, including tobacco, which, however, gives rather an unpleasant taste to the honey. The best that can be used is the common puff-ball *(lycoperdon)*, which may be found in most fields where the mushroom grows; or it may be purchased at the herbalist's. When dry, this burns readily, especially if it has been dipped in a solution of nitre. The best way of introducing the smoke, is to burn the puff-ball in a box with two pipes to it, one of which fits into a pair of bellows, and the other, small and long, enters the mouth of the hive. In a few seconds after working the bellows, the bees are heard to fall to the bottom, and the hive may then be removed to get at the honey in security. The side-combs should be chosen in preference, because the young brood are generally in the centre. Immediately after removing them the hive should be replaced, for the intoxication does not last many minutes. If, however, the heat has been too great, the bees are often destroyed. *Swarming* bees have always a tendency to settle somewhere, and if they have not a hive to enter, will fix upon the nearest branch of a tree, or other accessible substance. It is supposed that the noise usually made with a key and an old kettle induces them to accelerate their choice, but this does not appear to be really the case, though it probably does no harm. As soon as it is fixed, it is better to have a spare hive always ready for them, with a piece of honeycomb in it; and when this is placed pretty near the hive, there will seldom be any occasion for such a noise and tumult, as well as trouble in following the swarming cast. But if placed near them too soon, it will only be robbed of its honey, and will often also contain a number of wasps, which will tend to keep away the swarm for whom it was intended. No more than one swarm for increasing the stock should be taken from each hive during the season; and if, by accident, more should come forth, it should be returned to the parent stock by very slight fumigation, and dashing it in cold water, after which the bees may be allowed to climb up an inclined board, so as to reach their old hive,

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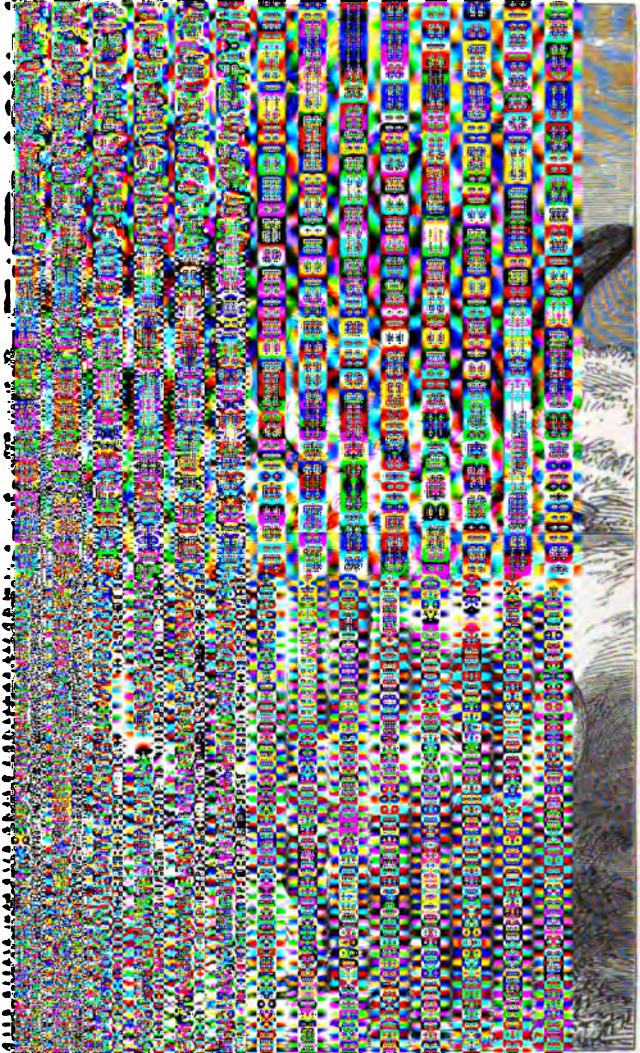

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securing at the same time the young queen, and destroying her. Sometimes a hive is too weak to stand the winter, being altogether under 20 lb. in weight, in this case it is better to fumigate them; and while in this state they should be sprinkled with honey, and then swept up in a heap, after which a weak hive may be carefully lifted from its seat, the drunken bees placed on the footboard, and the hive restored to its old position, upon which the honey on the stupefied bees makes the others lick them, and cements the friendship between them.

SUB-SECT. C.—PROFIT.

1206. THE AVERAGE PROFIT per hive will vary greatly according to the season, as in some wet seasons the bees do not gather honey enough to keep them through the winter, and they must then be fed with sugar and water, or honey, as long as they require it. I believe that 20 lb. of honey per single hive may be considered the average produce, taking one year with another and calculating upon all the accidents to which these insects are subject. But even this is an enormous addition to the cottager's means of living, and will give him on ten stocks enough to pay his rent and find him food for a pig. Bee-keeping should therefore be encouraged in all rural districts, and even in towns it is astonishing how well the bees will thrive, although they may have to fly a mile or two extra every day.

SECT. 5.—POULTRY KEEPING.

SUB-SECT. A.—VARIETIES OF POULTRY.

1207. THE VARIOUS KINDS OF POULTRY which may be kept with a view to economy, are—1st, the *English game-fowl;* 2nd, the *Dorking;* 3rd, the *Spanish;* 4th, the *Cochin China* and *Bramahpootra;* 5th, the *Hamburg*; and, 6th, the *Poland.* Besides which may be enumerated as varieties which do not succeed in point of economy, but which are prized solely for their rarity—the *sultans*, the endless sorts of *bantams*, and the *turkey*, *pea-fowl* and *guinea-fowl;* while, lastly, the *goose* and *common duck*, and especially the Aylesbury breed, may be reared with great advantage under favourable circumstances.

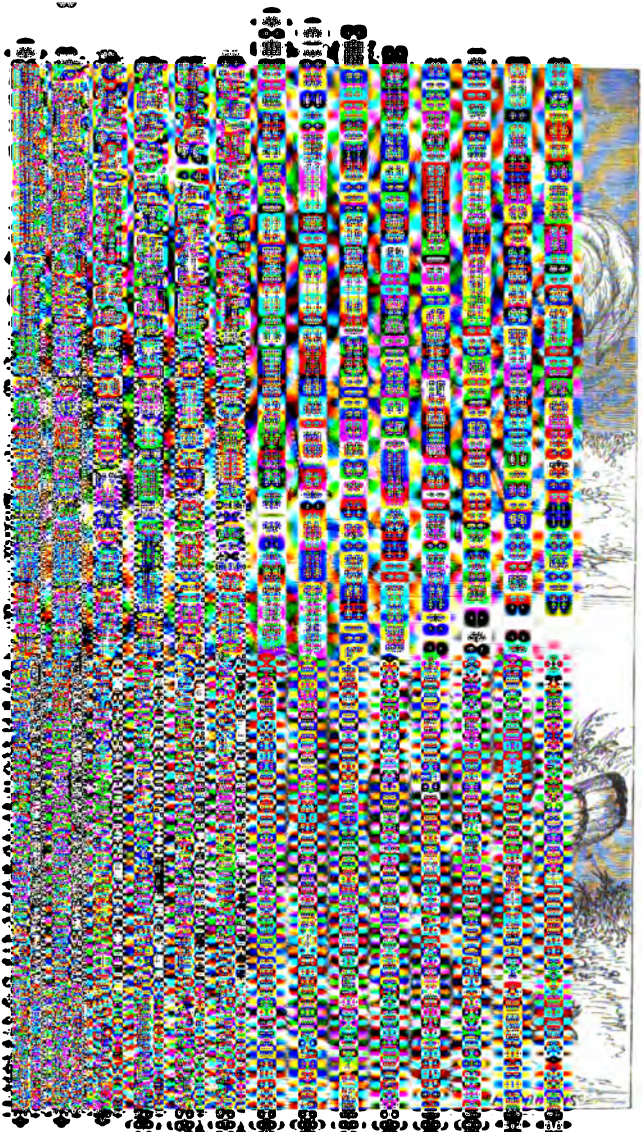
1208. THE ENGLISH GAME FOWL (*fig.* 93) is of all breeds the most beautiful, and indeed will bear comparison in this respect with almost any known bird. The cock carries himself proudly, yet gracefully; his port and bearing proclaim his fiery spirit and undaunted mettle, which are not belied by his wonderful endurance of punishment, for while prostrate, and even at his last gasp, he will often rise and make an effort to revenge himself, falling dead perhaps as soon as he has succeeded. When in good plumage the feathers are hard, crisp, close-fitting, and glossy. The body should be in such good proportion that the fowl will exactly balance when placed breast downwards on the hand. The wings should be wide and powerful at the shoulders, and the thighs muscular. Size is not a point of merit, the cocks weighing from three and a half to four and a half or even five pounds, and the hens considerably less. The colours are generally one or other of the following, but others are occasionally seen, viz.:—1st, *reds* (black-breasted, and otherwise); 2nd, *blacks* and *brassy-winged;* 3rd, *duck wings*, and other *grays* and *blues;* 4th, *white*, with *red* and *ginger piles.* The legs agree in colour with that of the body. This breed has been preserved in great purity for many years for its fighting propensities, and it is still kept up by some for that purpose, however closely the practice may be concealed. It is, however, also valuable as a means of improving some of the other sorts, and in point of flavour it is superior to all; but its skin is generally yellow, and therefore unfit for boiling. The hen also is not so good a layer as some others.

1209. THE DORKING FOWL (*fig.* 94), is of good size, with a compact and plump form, short neck, short white legs, *five toes*, a full rose, or sometimes a single comb, and a large breast. In plumage it is either white or coloured, the two being distinct varieties. It is difficult to breed these fowls to a very large size, but the flesh is of excellent quality, and the hen is a very close sitter; but the chickens are delicate, and they require a fine genial soil with a wide range, without which the chickens die off in great numbers. The colours are as follows—1st, Lord Hill's, *slates;* 2nd, the *grays;* 3rd, the *speckled;* 4th, the *brown* hens, with *black* breasted *red* cocks; and, 5th, the *white.*

1210. THE SPANISH FOWL (*fig.* 95), is almost invariably black, with a white face; but there is also a white variety of this kind. The Andalusian, which is *blue*, is likewise considered to belong to the Spanish division. The true Spanish requires the following points:—The white face of the hen, as well as the cock, should extend from the comb downwards, including the entire face, and meeting beneath in a white cravat, hidden by the wattles, the white being pure unstained with red. The cock should have a noble and gallant bearing, almost like that of the game-cock, though differing in shape; and the plumage should be glossy and perfectly black, with a brilliant metallic lustre. The legs clean-made, blue, and long. The chief drawbacks in this breed are the delicacy of the chickens, and their late maturity. The hens lay a large egg, and in considerable numbers, being very little inclined to sit. The chickens hatch out black, with a little mixture of dull white or yellow. These fowls require considerable warmth in the winter, without which their combs are very apt to be frozen.

1211. COCHIN CHINAS, MALAYS, AND BRAMAHPOOTRAS are very closely allied; the last-named being the latest importation, and, it is said, the most valuable kind. It is shown at *fig.* 98. The Cochin China is admired for its large size, its handsome appearance (?), and the brightness of its colours; but more especially for its laying properties, and gentle, quiet disposition. The chickens are also exceedingly hardy. A first-class fowl should be large, square, and compact; full in the chest; deep in the keel, and broad across the loins and hind-quarters. The head is delicately shaped, with a short bill, and the comb of a fine texture, rather small, perfectly single, straight, and equally serrated; the wings should be small and closely folded; tail short and horizontal; legs very short, yellow, and heavily feathered. The regular colours are *yellow*, *buff*, and *cinnamon*, *grouse*, *partridge*, and *cuckoo*, the *black*, and the *white Cochins*. The *Malay* is a large and heavy fowl, with close and hard feathers, from which circumstance it often weighs more than it appears to do. It stands high, with a very upright gait, the legs being long, and the thighs remarkably long, strong, and firm, while the tarsi are of moderate length, round, stout, and of a yellow colour. The tail is long and drooping; the head snake-shaped. The comb is like a half-strawberry, and naturally resembles that of the game-cock when cut. The neck is rope-like and close-feathered, and there is little or no wattle. The eye is pearl-like, and the bill of the hawk shape, without stain. They are early layers; the egg being of medium size, with a tinted shell. The chickens are ungainly-looking animals, and fledge slowly. The cocks average 10 lb. in weight, and the hens 9 lb. The former are inveterate fighters, and almost equal to the English game-cock in bravery. The *Bramahpootras* have lately been introduced from America, and are now considered by many people superior to both the Cochin and the Malay. They appear to be a distinct variety, since their produce never degenerate into Cochin Chinas. The pure breed should be large and weighty, of a free, majestic bearing, alike removed from the waddle of the Cochin China and the upright carriage of the Malay; short in the leg and neck, wide and full in the breast, *which is much larger than that of the Cochin*, and wide and deep in the body; legs yellow and well feathered, but not smothered in feathers like the best Cochins; head with a slight fulness over the eye, which gives breadth to the top of the head; tail short, but otherwise full in size and spread, that of the cock opening into a fan; comb either single or a pea-comb, which latter should be of a triple character; colours *black*, *white*, and *gray*, and each sort coming true to its colour, in which respect this fowl differs from the Cochins, which are never to be depended on. This is a remarkably useful and hardy fowl, laying large eggs, foraging well when at liberty, and good sitters and mothers. The chickens fledge more kindly than the Cochins, grow fast, and are very hardy. These birds, when full-grown, weigh from 22 lb. to 25 lb. the pair. The chief objection is their tendency to roam, as they are not satisfied unless they have some acres of land to wander over; but when thus gratified they will find food for themselves, and live on much less than the cochins, which, though great eaters, will not seek for their food, but must have it all provided for them.

1212. THE HAMBURGS AND POLANDS may be classed together, especially as there is a great difference of opinion as to their origin and distinctive points. The Hamburg (*fig.* 96) is a medium-sized fowl, with a brisk and spirited bearing, a brilliantly-red double comb, ending in a spike at the back, taper blue legs, ample tail, exact markings, and a well developed white deaf-ear. They are profitable fowls to keep where eggs are required for home-consumption; they are also non-sitters, and consequently may be made to lay all the year round, except when moulting, being excellent layers, and not large eaters; but the dealers do not give the same price for them as for larger eggs, those of the Hamburg fowl being very small. They forage well, and do not bear close confinement. The colours are as follows:—1st, the *gold* and *silver spangled*, in which the feathers have a spot either of yellow or white; 2nd, *pencilled*, also gold and silver, according to the colour, but each feather being divided into bars; and, 3rd, the *black* with white ear-lobes. The POLAND FOWL is very beautiful, and of good useful qualities also. The chief distinguishing characteristic is the possessing of a full, large, round, compact tuft on the head (see *fig.* 97). The form is neat and compact, and of medium size, with full, plump bodies and breasts, lead-coloured legs, and ample tails. They are good layers, resembling the Hamburgs in this respect. The colours are the following:—1st, *black*, with white tuft, which, to be perfect, should have little or no black; 2nd, *gold* and *silver Polands*, with tufts of



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a corresponding colour; 3rd, *yellow*, *blue*, *buff*, or *spangled*, and *laced*, all recently-introduced varieties. The latest importation of all, called the *Fowls of the Sultan*, appears to be of this kind, but entirely white.

1213. BANTAMS are beautiful little fowls of all colours; but those most prized are the *gold-laced*, *silver-laced*, *white*, *black*, and *game*. The feathery-legged bantams are now almost entirely out of date. None of them can be reared or kept for any purpose but as pets; and though their flesh is good, and their eggs high and well flavoured, yet the size of the bird and egg is so small, as to make them far from serviceable, in proportion to their cost.

1214. THE PERSIAN, or *rumpless-fowl*, the *frizzled*, or *Friesland*, the *silky* and the *Russian*, as well as the *bakies*, or *dumpies*, have no peculiar merit, except their rarity and beauty, and belong rather to the fancier than to the ordinary poultry-yard. To this class belong also the *ptarmigan*, another *silky Cochin*.

1215. THE TURKEY is undoubtedly an American bird, and must have been introduced into Europe since the discovery of that hemisphere. The name is therefore a misnomer, as the bird has nothing to do with Turkey in Europe or Asia. It is found wild at the present day nearly all over the more temperate parts of the continent of America, where it is irregularly migratory and gregarious, and forms a most valuable article of food. As domesticated in Europe, it appears as the well-known denizen of the farm-yard, where the proud strut of the cock, with his expanded tail and lowered wings, make him the admiration, as well as the terror, of the juvenile visitor. The adult turkey is very hardy, and braves our winters with impunity, preferring even the imperfect shelter of the adjacent trees to any in-door lodging. But in severe frosts these birds are not to be left out with impunity, as their legs and feet are apt to become frost-bitten, and they should therefore be compelled to enter some out-house at such times; and, indeed, at all times they incur great risk from foxes and two-legged thieves, by indulging them in their fondness for their natural perches. Turkeys are very fond of roaming, and will not long thrive without being allowed to wander over farm-land, where they pick up and greedily devour insects of all kinds, as well as the tender heads of turnips, &c. There are several distinct strains of the domestic turkey, but not enough to make them into varieties; of these the chief are, the *black Norfolk*, the *white*, the *gray*, the *Irish*, and the *French*. The first of these are common in Norfolk, Cambridge, and Suffolk, and grow to a great size. The Irish are also fine, but are a long while reaching maturity. In choosing turkeys for breeding, the cock should be selected with a broad breast, clean legs, wings and tail ample and well proportioned; eyes bright, and the carunculated skin of the head and neck should be fully developed and changeable in colour. The young cock is sufficiently mature for breeding purposes at a year old; but he does not arrive at perfection till three years old, and lasts till he is double that age. The hen should be plump, lively, and animated, with plumage similar to the cock with which she is to be mated, so as to avoid any mixing of colours. She breeds at a year old, or sometimes at rather less than that age, if she has been a late hatch of the previous year. The laying generally commences in the middle of March, and is indicated by the hen assuming a degree of importance and restlessness which is new to her. She should now be closely watched, for she is otherwise very likely "to steal her nest," as the act of laying in an out of the way place is called. To avoid this, a nest of straw, lined with dry leaves, should be made in some quiet out-house, and the hen confined there every morning until she has deposited her egg. The turkey is a good sitter, and will sometimes lay one or two eggs after she has begun to sit, and these should be removed, as they would not hatch at the right time. Scarcely anything will induce her to leave her nest, and she must be supplied with food and water close by, and within her reach. From the 20th to the 31st day the hatch takes place, and the chicks should be carefully removed by a person to whom the old bird is well accustomed, as fast as they are hatched, and kept in a warm basket until all have made their appearance.

1216. THE PEA-FOWL is an ornamental bird only, and though good for the table, yet its habits are so rambling, and it eats so much food, that it can scarcely be kept for the sake of its produce. The management is the same as for the turkey.

1217. THE GUINEA-FOWL is less generally kept than the turkey, though in proportion to its size it fetches as good a price, or even better. It is said to resemble the pheasant in flavour, and is sometimes bought with that idea; but, as far as my judgment goes, it is not nearly so like that bird as a fine well-fed fowl. It, like the two last kinds, is of a very rambling disposition, and will not thrive except in rural districts. The hen must be watched still more closely than the turkey, when about to make her nest, which she does in the month of May.

They mate in pairs, and the period of incubation is 26 days. When allowed to range at liberty over arable land, they require very little feeding, and hence they are kept by many people; but their habits are so wild, that they give an immense degree of trouble. From the great mass of feathers, the guinea-fowl looks larger than it is, as when plucked its size is *not greater* than that of a common fowl.

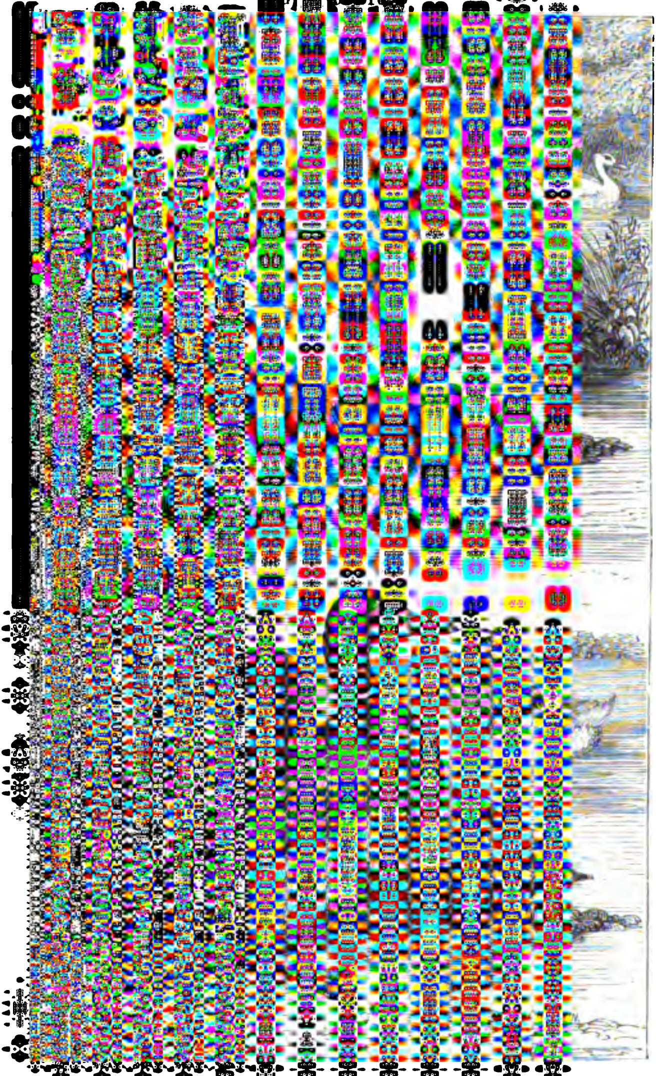
1218. THE COMMON GOOSE is undoubtedly a descendant of the wild gray-lag, though it has, by long domestication, lost the power of long flight, so well marked in that bird. Like it, however, it is gregarious; and when many flocks are kept together, they separate at night as regularly as a family of children come home from school. The domestic goose is too well known to need description. One gander is required to three or four geese, which, in mild seasons, lay early and sit well. They should, therefore, be supplied while on the nest with food and water. Geese, though kept in large numbers in some localities, are profitless to those who have no run for them, as they require, besides a large supply of grass, plenty of grain of some kind, and without it they soon become diseased. Green geese are fattened on oatmeal and peas, mixed with skimmed milk or butter-milk; also, upon oats or barley; with this food they are ready for the table at four months old. But though geese cannot be advantageously *reared* without common land, yet they may be bought at four or five months old, and fattened at a profit. At this age they generally cost about 2s. 6d.; and if they are penned up, with a good run, and fed upon oats and plenty of lettuces and cabbages, they rapidly gain flesh, and increase in size. About a peck and a half to two pecks of oats per goose will be sufficient; and as the green food would be only the refuse of the garden, the cost of the oats—say, one shilling—is all that is to be added to the original price; or, in all, 3s. 6d. for a fat goose worth 5s. or 6s. at the least.

1219. THE COMMON DUCK, OR TAME DUCK, as it is sometimes called, appears to be a domesticated variety of the mallard or wild-duck, but with one important difference, consisting in the practice of polygamy, instead of the invariable pairing, which is the habit of the wild-duck. Ducks require water much more than geese; and they do not graze, but are hearty feeders, devouring anything that comes to hand, whether green vegetables, or meal, or potatoes, or meat—either raw or dressed, or, again, worms, slugs, and the larvæ of insects. A drake should be allowed four or five ducks; sometimes, however, six or seven will not be found too many. The female lays for more than three months, sometimes even producing as many as eighty eggs. The average, however, is not more than half this number. She will cover about twelve or fourteen, and is generally a steady sitter. Plenty of straw should be allowed her, as she always covers her eggs up when she leaves them, and she is often away an hour at a time, when the eggs are liable to be chilled if not well protected. The eggs are hatched at the end of a month and the ducklings should be kept from the water for the first week or ten days. They are easily reared on barley-meal and potatoes, with a little boiled cabbage added occasionally. The chief varieties are the *white Aylesbury* and the *Rouen*, besides numerous crosses of these and nondescript kinds. The white Aylesbury (*fig.* 99) should be large, with a perfectly white plumage, yellow feet, and a flesh-coloured bill. The *Rouen* (*fig.* 100) is a large dark-coloured variety, resembling the wild-duck in all respects but size.

1220. PIGEONS are kept sometimes in the poultry-yard, but unless they are allowed full liberty to fly at large, and pick up a partial living on arable land, they are not profitable birds. Their varieties are so numerous, as to require a handbook to themselves, if fully described; but for economical purposes, any of the common sorts will be found to answer better than the fancy pigeons.

SUB-SECT. B.—SELECTION OF POULTRY.

1221. THE INTENDING POULTRY-KEEPER will have first of all to decide upon the particular species of poultry to be kept, and then to make selection of the variety which shall compose the inhabitants of her pens. In reference to economy, I believe it is acknowledged that no species pay like fowls and ducks, which may also be very well kept together where there is any water for the latter and a proper situation for the former. Turkeys and guinea-fowl will only pay in large flocks, kept by farmers, who are not incommoded by their roving propensities, or at all events not more so than is counterbalanced by the market-return. Many extensive breeders of the turkey maintain that they really do not pay as they ought to do, and that if all the grain they eat were charged to them, there would be little or no profit on the balance-sheet. But as their wives receive the money and do not pay for the keep, it suits them to represent the cost as less than it is, because they would often have more difficulty in dipping into the master's pocket than into his granary. It becomes, therefore, in



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point of economy, a question only between the different breeds of fowls and ducks. Here, again, much depends upon the produce which is required. If for eggs alone, the Spanish or the Hamburg would be selected, as they are the best layers and seldom sit. In one poultry-yard I know of an average of 240 eggs per hen per year, all being pencilled Hamburgs. Cochin Chinas also lay well and early, but not so many as the two first-named. For the table nothing beats the game-bird for roasting, or the Dorking for boiling; the latter is also as good as the former for roasting. If chickens, poults, or capons are desired, the best bird is a cross of the Bramahpootra or Cochin hen with the game-cock. These lay all the winter, and produce very fine cockerels at six months, and the chickens come early, and are also good, though not so neat as some other breeds, being unshapely at an early age. The hens are very early layers and good sitters, and the chickens very hardy, though they do not lay a great number of eggs; but if this plan is adopted, the resulting cross must not be used for breeding, as its produce will not inherit with any certainty the good qualities of either parent. The Bramahpootra has a much better form for the table than the Cochin, and crosses with the game-bird equally well. Spanish birds are well-flavoured, and though dark-feathered, yet the skin is delicate; but the chickens are not hardy enough to rear with advantage. With regard to ducks, either the true Aylesbury or the Rouen, or a cross between them, are far superior to all others; and one or the other should be selected with great care as the foundation of the breed of these birds. Sometimes, however, the locality has much to do with the selection. Those who have a warm and sheltered situation, with a fine dry soil and an extensive range, will do well to try Spanish or Dorking fowls. But if the space is confined, and the yard cold or at all damp, no fowls will be so likely to succeed as the Cochins or Bramahpootras, which may often be reared with success where other birds would perish. Bramahs, however, will not be confined so easily as Cochins, but will get over a low fence. Game-fowls and Malays are also hardy, but they require liberty. Polands thrive on a dry soil, but will bear a moderate degree of confinement; while Hamburgs are hardy, but *will* have liberty or die. Geese require a common, and water also, though not to any great extent. Ducks should have water of a shallow character—as, ditches or rivulets. Turkeys and game-fowls can only be reared with success upon a dry and warm soil, with plenty of run and a warm aspect.

SUB-SECT. C.—MANAGEMENT OF POULTRY.

1222. Whatever breed of fowls is selected must be provided for carefully, both by proper lodging and by feeding. The chief points required, are—1st, *a dry and warm lodging*; 2nd, *proper vegetable and animal food*; 3rd, *a supply of lime, pebbles, and dust*; 4th, *pure air and water*; and, 5th, *the proper rearing of the young*.

1223. THE LODGING FOR ALL FOWLS should be well sheltered from the weather; and if early eggs are desired, it should also be warm, as over a stable, or against a kitchen chimney. It should front the east or south, so as to catch the morning sun; and it should be ventilated with a window at each end, to be opened or shut at pleasure, so as to keep down the excessive heat of summer. The perches must be arranged according to the fowls to be kept; Cochins and Bramahs requiring a broad ledge only about a foot from the ground, while all others should be raised at least two feet, and should be square, with the corners rounded off. Boxes for nests are to be fixed about two feet from the ground, and in proportion to the number of hens. But, besides the fowl-house, a yard or run of some kind is desirable, unless they are to have the run of a wide, dry, and sandy common, or of an orchard or field; in which case they only require the house for protection at night, though even then a yard is desirable for the rearing of the young broods. When the hen has first hatched she should be put under a proper coop, one side of which is of solid board, and this protects her from the rain and sun, while the other is open and allows of the chickens getting through to pick up small insects, and to take the exercise which is necessary for all young animals.

1224. THE NATURAL FOOD of all poultry consists partly of vegetables and partly of insects; and this is the case whether the bird is a common fowl or a swan, a turkey or a pigeon. When, therefore, fowls are penned up in confined yards, where they cannot obtain any insects at all, and where they are often deprived of all vegetable food, but that contained in the grain upon which they are expected to thrive, the consequence often is that they become unhealthy. In all cases, it is a bad practice to under-feed poultry, and from the very first they should have a liberal supply of good and solid food. The store-hens should be got into laying condition as early as possible; and those intended for killing should be kept in good condition, always ready for the spit, from which state they may readily be made as fat as some tastes require them to be, by a very short confinement. The grain should be good sound wheat, or barley, or hominy, or rice—not tail-wheat or refuse barley. Oatmeal or buck-wheat, made into cakes with barley-meal, is also good; and potatoes, steamed and mashed up with oatmeal or barley-meal, is a capital article of diet. Many poultry-keepers boil the grain, whether wheat, oats, maize, barley, or rice; this practice is generally adopted in France; but it does not appear that there is any great advantage in the plan, except in the case of maize, which is too hard for most fowls, unless softened by boiling or by steeping. In addition to these solid materials, greens of some kind should always be supplied for them to pick at; and where they are confined to a small range, and cannot procure insects, a supply of animal food must be afforded, or the quantity of eggs will be limited in extent. This is especially needful for the Cochin Chinas, whose quiet and indolent habits never permit them, even when at large, to obtain insects in abundance. Nothing answers better for this purpose than the refuse bones of a large family, with the meat and gristle attached to them, which the fowls will pick as clean as possible, and enjoy beyond description. When these cannot be procured in sufficient quantity, bullock's liver, or good horse-flesh, or some animal substance or other must be found; and in these days of large and extensive poultry-yards, the latter-mentioned article has been most extensively employed by the most successful breeders of prize fowls. In one establishment, I have strong reason to believe, many pounds of horse-flesh per week have been regularly consumed, at a trifling cost which would have been increased twenty-fold by the use of beef or mutton. This is particularly necessary for procuring early eggs, as at that time insects and worms are rarely to be met with. For young chickens, boiled egg, or curd mixed with meal, is the best food.

1225. THE PROCESS OF FATTENING will greatly depend upon circumstances. Spring-chickens may be put up as soon as the hen ceases to take care of them. In their pens they should be supplied with fine pebbles, but they do not take them in sufficient quantities, and hence their food must be pultaceous—as, for instance, bread and milk, barley-meal, or oatmeal mixed with potatoes and milk. When they are kept up long, a few grains of pepper will help the digestion. When chickens have the run of a farm-yard and plenty of food, they keep themselves in very good condition for the table, and their flesh is sweet, juicy, and delicately tender; but for the market they are generally required to be more fat. Many people feed their pullets well, and keep them fat all the winter, and then kill them early in the spring, while full of flesh, and before they have laid themselves poor. In this way a considerable stock of early eggs is obtained when at a high price, and the birds are sold before they are rendered tough by a second year. Cramming is seldom practised with advantage for fowls; but for turkeys it is necessary to produce the amount of flesh and fat which is thought desirable. But even for the former birds, in some cases, this plan is adopted, especially in the neighbourhood of London, where many are thus raised to a high weight by this system in a very short period, aided by crowding them in small dark pens, by which their natural restlessness is prevented from having full scope. In like manner, ducks are made to assume a great quantity of fat; but as their appetites are almost insatiable, they are never crammed. The same kind of food as for fowls soon makes them as fat as butter, if they are confined in the dark for a very short time.

1226. LIME, PEBBLES, AND DUST are as necessary as corn for fowls; the first of these being in the nature of food for the making of the shells of the eggs. Hence it is that some fowls in confinement lay soft eggs, without shells, because they cannot obtain what they want. It is true that wheat and barley, especially the former, contain a considerable quantity of lime, but not enough for the shells of the eggs, and for this purpose *slack*-lime or old mortar must be afforded them. The latter is the best material, as it contains a proportion of sand, which acts as the natural aid to the triturating powers of the stomach. All fowls, therefore, but especially laying hens which have not their full liberty, should have access to a small heap of old mortar or slack-lime. But, beyond this, they all require pebbles to be taken into their gizzards for the purpose of aiding these powerful mills in grinding down the corn upon which they feed; and therefore these articles also must be placed within their reach, gravel being the best material for the purpose. Lastly, as fowls are prone to parasites, and are by nature induced to get rid of them by "bathering" in the dust, a supply of this article, *in a dry* state, should be afforded; for this there is nothing better than coal-ashes, or, better still, fine sand and coal-ashes mixed.

1227. PURE AIR AND WATER need hardly be insisted on, as their advantages are well known to every one. The former is obtained by ventilating the roosting places at night, and by giving as much liberty as possible. The latter is best afforded by a running stream through the yard, however slow the supply may be. Whenever water is laid on, a draining-pipe, in the form of a half-circle is easily led across the yard, and kept constantly running, with ever so small a stream at one end, and a corresponding waste at the other; provided that it is so arranged that the dirt falling into it may be daily washed out.

1228. **THE REARING OF YOUNG POULTRY** begins with the obtaining of fertilized eggs; to effect which to advantage, the cock should not be mated with more than five or six hens, though, for edible eggs, he may be allowed ten or twelve. Where a breed is to be kept up or improved, one to three is the proper number; but for all ordinary purposes the above proportion is not too great. Where a large head of poultry is maintained at liberty, there is some difficulty in reconciling the cocks to one another; but if the new comers are introduced at the moulting season they will be allowed to rest in quiet till the season of laying, and in the meantime have acquired the right of possession over the dunghill as well as generally over a certain number of hens. It is, however, better in all yards to shut up each cock separately at night with the hens to which he is allotted; in that way they generally keep distinct, and no undesirable crosses are effected. An old cock generally becomes vicious, both to his own hens and to his rivals and their respective trains; when this is the case he should be dismissed as a general nuisance. When a hen is about to sit she shows her desire by ruffling her feathers and "clucking," wandering about in an uneasy manner, and sitting upon any eggs she can find, or, failing them, upon the nearest approach to them within her reach. Well-fed Dorkings are the earliest and best sitters, and will often rear a hatch in November, which, if taken care of and kept warm through the winter, are worth 8s. or 9s. a couple in February. Most hens, however, do not sit till April, May, or June, when chickens are easily reared without risk. In selecting a good sitter, she should be of large size, well feathered, and with short legs. The number of eggs which she can cover will vary, according to her size, from ten to fifteen. Some people set two hens together, and when the chickens come forth give them to one mother, reserving the other for a second hatch; and this answers well enough in the warm weather of summer; but in the spring and winter the heat of the mother's body is as much required by the chickens after they are hatched as while in the shell. Hens should be fed directly they leave the nest, but it is not a good plan to feed them *on* the nest, since it is a well known fact that there is a great advantage in the periodical cooling of the egg for a short time each day, which causes a contraction of the air-vessel inside the shell, and consequent imbibition of fresh air, which is a kind of respiration daily carried on. Those who hatch chickens artificially, having discovered this law of nature, reduce the temperature a few degrees every day for a stated time with great advantage, and consequent security in hatching. In selecting eggs for setting, take the newest; those above a fortnight or three weeks are not to be depended on, though sometimes they will hatch at the end of double that period. At the end of twenty-one days the chick is ready to break the egg, and, as a rule, the more completely the hen and her brood are left to nature the better. Sometimes, however, assistance is required, or the chick will fail in its work and die inside the shell. When this is suspected, there can be no harm in breaking a small hole in the shell, *not in the membrane lining it.* If the proper time is arrived, this membrane will be free from blood, thin, and almost dry; whereas if otherwise, it will appear purple, and show minute blood-vessels ramifying upon it. In the latter case no harm has been done, but patience must be exercised, and perhaps on the next day the chick will deliver itself, or will then be fit to be delivered, by increasing the fracture little by little, and at intervals of two or three hours. If the hen is a quiet mother, and does not seem uneasy, it is better to leave her chickens with her till all are hatched; but sometimes she bustles about in the most officious manner as soon as one comes forth, and if this were allowed to remain she would probably destroy all the others in her restless endeavours to make much of her first bantling. In such a case a warm basket of wool by the fire is the best alternative, where the chickens may be placed as they come out until all are hatched. In the depth of winter or in the cold of spring artificial heat of some kind is required to rear chickens, and this is afforded in the cottages of the poor by allowing them to live in the same room with them; but in the gentleman's poultry-yard this plan must be imitated either by allotting a pen placed at the back of a kitchen-chimney, or a stable-boiler or stove, or else by a warm stove specially devoted to the purpose, which, when there are many chickens, will soon pay for its fuel by the saving of the chickens. If the chickens look healthy, and their plumage of down soon dries and spreads out in a regular manner, all is well, especially if they run about strongly. Do not be in too great a hurry to get them to feed, as they require nothing for twenty-four hours, or thereabouts. By that time all are generally hatched; on returning the first chickens to the hen, and placing food before her, she entices them by her peculiar "cluck," and the little things soon begin to eat. Crumb of bread soaked in milk and water, and mixed with chopped egg or curd, is the best thing to begin with. Next mix with the bread a little finely-chopped meat instead of egg; and at the end of four or five days or a week, barley or oatmeal mixed with curds will be the best food. A shallow pan, made on the principle of preventing immersion—that is, with several subdivisions on the surface, should be filled with water and always kept within reach. After a fortnight, or three weeks, these chickens may be fed upon the same kind of food as that allotted to the older ones mentioned in par. 1224. The management of young ducks is exactly the same as that of young chickens, excepting that they have a desire for water, which should not be gratified for the first few days, or they will, in cold weather, get the cramp, and die from drowning.

SUB-SECT. D.—TRUSSING OF FOWLS AND MANAGEMENT OF EGGS.

1229. FOWLS are killed for the table without loss of blood, which would make them dry and insipid. The usual plan is to dislocate the neck by twisting it, or pulling it suddenly, taking the head in one hand and the neck in the other, as in drawing a cork. This last is a very simple and effectual plan, and causes instant death by separating the spinal cord. A smart blow on the back of the head with a heavy stick, will have the same effect. Ducks and geese are generally killed by passing a knife through their mouths into the brain, which lets out some proportion of their blood, while at the same time it kills them instantly.

1230. FOWLS, AND POULTRY IN GENERAL, should not be trussed or plucked till cold, as the skin tears easily while warm. The inside is then removed, but no water should be introduced, as there is no dirt occasioned if properly managed. After this, the liver and gizzard are prepared, by removing the lining of the one and the gall bladder of the other, and placed under their respective wings in fowls and turkeys, but kept as giblets in geese and ducks. The breast-bone is very generally depressed by force, so as to make the bird look more plump, and as no harm is done by this, there is no reason to be given against its adoption. When poultry are to be cooked the next day, put a wet cloth over them during the night after drawing them, and plunge them in cold water for an hour, by which they become much more tender.

1231. IN CHOOSING EGGS, with reference to freshness, hold them to the light of a candle or lamp, surrounding them with the finger and thumb. If the whole egg looks of a transparent yellow, without any particles but those caused by dirt, it is fresh; if addled, or half-hatched, it is opaque; and if stale, the shell is mottled more or less, according to its degree.

1232. TO PRESERVE EGGS there are several methods adopted, all of which depend upon the exclusion of the air, by stopping up the pores of the shell, and by other means of excluding it from contact with the atmosphere. Bran and sand act to a certain extent by excluding air, but not sufficient to keep eggs long; for this purpose salt and lime in water make the best preservative. The following is an excellent receipt:—

TO KEEP EGGS.—Pour 5 quarts of boiling water over 1 lb. of common salt and 1 oz. of saltpetre, when it is cold put in 7 oz. of *quick*-lime. Let it stand two or three days, frequently stirring it; when quite clear pour it on the eggs, which must be closely covered.

Another Method.—Collect the eggs when quite fresh, smear them over with butter, put them in nets, hang them up and turn the nets once a week.

Another Method is, I believe, still more efficient, but rather more troublesome. It consists in making a thin mortar, by slacking some quick-lime with water, and mixing it with sand until it is of the consistence of cream. This is to be kept for a fortnight, stirring and beating it occasionally, until all the tendency to set has gone by, and then the eggs are to be covered with it, adding a layer of mortar over each layer of eggs and piling them up as high as the vessel will hold. The top must be kept constantly covered with water, or the lime and sand will become hard and enclose all the eggs so firmly as to forbid their extraction. In this way I have known eggs kept sweet for many months.

SUB SECT. E.—COST OF POULTRY.

1233. THE COST OF KEEPING POULTRY is so great, when everything is to be purchased at market-prices, that their produce will rarely be obtained much cheaper than it can be procured in the shops. The chief advantage, and a very great one, consists in the certainty of the freshness of the eggs; and to those who eat them plain boiled for breakfast every morning, this is of no light importance. A bad egg on the table is enough to destroy a delicate appetite; and yet, unless a very high price is paid for new-laid eggs to some neighbour upon whom entire dependence can be placed, such an event will occasionally happen. Even if they are not absolutely bad, yet many of the eggs purchased at the shops will turn out not fresh enough for the breakfast-table, and to most palates they are by no means satisfactory. Wherever, therefore, these articles are much used at that meal, fowls may be kept with advantage, in every point of view; but for procuring eggs for general domestic purposes, they will fail economically, except to the cottager or farmer's wife, each of whom have peculiar advantages. The following balance-sheet of a stock of poultry, consisting of one Spanish cock, three Dorking and three Spanish hens, kept in a close part of the suburbs of London, with a small yard only to run into, will show what is the cost of eggs in such a situation. The food is not priced higher than in the average of towns, and the only charge which might not always be incurred is that for gravel, lime, &c. The eggs are valued at 1½d. each, which, on the average, is about the value of *new-laid* eggs in that locality, or, in fact, rather beneath it.

TABLE OF COST AND PRODUCE OF POULTRY.

COST of FOOD, &c., for ONE COCK and SIX HENS, from July 12th, 1855, to July 12th, 1856.

DR.

		£	s.	d.
Barley ...	two bushels	0	12	6
Potatoes ...	"	0	9	0
Rice	... 12 lb.	0	3	0
Oats	four bushels	0	10	6
Cornchandler's sweepings ...		1	4	0
Greaves		0	2	6
Gravel and lime		0	2	6
Vegetables and butcher's offal, no charge.				
Prime cost of fowls		0	16	0
		£4	0	0

PRODUCE of ONE COCK and SIX HENS from July 12th, 1855, to July 12th, 1856.

CR.

		£	s.	d.
1855.				
July ...	18 eggs			
August ...	73 "			
September	39 "			
October	—			
November	18 "			
December	18 "			
1856.				
January	19 "			
February	41 "			
March ...	67 "			
April	104 "			
May ...	61 "			
June ...	62 "			
July ...	32 "			
	547 eggs, at 1½ each	£3	8	4½
3 Chickens killed		0	7	6
5 Ditto alive, value		0	5	0
2 Pullets, to supply the place of old hens worn out ...			—	
Present value of stock		0	16	0
		£4	16	10½

According to this statement of account, the gain has been 16s. 10½d. in the year; but supposing the eggs to be valued at the average price in the shops there must be deducted 547 halfpence, which would then make the balance a trifle the other way. In many situations, however, more advantageous to keeping poultry, the number of eggs would be at least double; and more chickens might be reared without loss. Hamburgs lay on the average about 230 to 240 eggs a piece, which, at eighteen for a shilling, will give 13s. 4d. as the yearly return in eggs for each hen, or about double, indeed, in some places treble, her cost for keep. Where eggs and chickens also are desired, and a part of the stock is composed of Cochins, and the remainder Dorkings and Hamburgs, the first-named will lay eggs enough for the winter, and be ready to sit upon the earliest Dorking eggs, while the Hamburgs will keep up the supply of these after the Dorkings have done laying. In this way a much more profitable return may be made; but then it requires good capabilities in yards, buildings, run, &c., and a considerable knowledge of the treatment proper at all ages. A good Dorking hen is said to lay six dozen eggs (value 4s. to sell) and rear two broods of chickens, together amounting to thirty, at a profit altogether of 15s., in addition to 4s., the value of the eggs. This, however, allows nothing for depreciation of stock, nor for accidents to young poultry, and is a very theoretical and sanguine calculation, which will seldom be realized.

SECT. 6.—RABBITS.

1234. RABBITS, according to Cobbett, are very profitable—the young ones that are produced by three does giving the poor man a meal twice a week, all through the year. A doe breeds without injury seven litters a year, and often brings nine or ten at a time, of which six only should be kept, or both the doe and her produce will become diseased. Each doe, with these limitations, will therefore rear 42 young ones, which, multiplied by 3, gives 126 for the entire increase during the year, or more than two per week, the surplus being allowed for accidents and disease. The hutches should be kept very clean and dry, and a dark apartment must be allowed for the does to make their nest in, where they should not be disturbed on any account. They should be well fed on dandelion, carrots, parsnips, Swedish-turnips, strawberry leaves, ivy, wild parsnip, *but not cabbage*, at all events, in any quantity. A little oats and bran should also be given each day, and beyond this the rabbits really cost nothing. To a poor man, therefore, who has a family that can be useful in collecting food, the keeping of rabbits, either for home-use or for sale, is an object worthy of his careful consideration. It is quite true, as the labourer will tell you, that no stomach will take rabbit twice a-week all through the year, and especially tame rabbits, as usually kept in dirty hutches; but they will always find a sale at the nearest market, and the money thus obtained will go still farther in the purchase of a superior quality of animal food.

SECT. 7.—HOME-MADE BREAD.

SUB-SECT. A.—MATERIALS AND UTENSILS.

1235. BREAD, often called "the staff of life," is one of the most important articles of domestic economy which can be advantageously made at home. The materials of which it is composed will be found described at length under Sect. 9 of the last chapter, with the exception of a few used in the fancy articles, which come under the section on grocery, as currants, rice, &c.; or under those treating of milk and eggs. In addition to the three kinds of yeast described at page 281, the two following receipts are introduced here as varieties, the second more from curiosity than from any other motive, as alcohol is developed in it just as much as in the ordinary form:—

PATENT YEAST.—Take one pound of malt and one ounce of hops, boil them for two hours in six quarts of water; let it stand till about blood warm, then stir in gently three-quarters of a pound of flour, and add three-quarters of a pint of yeast (which should always be reserved from the last made as stock), and let it stand to work for twenty-four hours, when it may be used or bottled. It will not keep more than a fortnight, but will do for stock when sour, though not for bread. It should be kept in bottles well corked in a cool place. In hot weather let the bottles stand in water. To make bread, use one quart of this yeast to two and a half pecks of flour; set the sponge over night, and knead it in the morning.

TEETOTALLER'S YEAST.—Dissolve three pounds of malt and three ounces of hops in two and a half gallons of water, and boil them twenty minutes; strain the liquor into an open vessel; when nearly cold, add nearly one pint of teetotaller's yeast, and in twenty-four hours it will be ready for use. Bottle it, putting the corks in tightly. Half a pint of yeast will raise eighteen pounds of flour. Lay the leaven with a quart of milk or warm water over night, and when the bread is made up, it will take more warm water. Common yeast will *do* to make it with at first, but is not so good, the yeast being very thin.

1236. The proper quantities of each kind of yeast to raise 14 lb. of flour, are as follows:—

Brewer's yeast	... ...	4	oz.
German yeast ...	... ...	2	,,
Patent yeast ...	... ...	12	,,
Teetotaller's yeast	... ...	7	,,
Hydrochloric acid Bicarbonate of soda	of each	2	,,

1237. THE UTENSILS FOR MAKING BREAD are not many, the chief being a good *oven*; or, if the wheat is to be ground, a *flour-mill* in addition. Besides these, a *kneading-trough* or *pan*, a *board*, a *girdle* for muffins, &c., and a few other articles, are all the utensils required.

1238. THE FLOUR-MILL (*fig.* 101) adapted for private use is now sold at a price which brings it within the reach of most families. The mill complete, with dressing apparatus, costs about £8 to £10; and will separate the flour into "firsts," "seconds," and "thirds;" the bran also being ejected at the end. This is useful for obtaining fine flour for pastry; but many people

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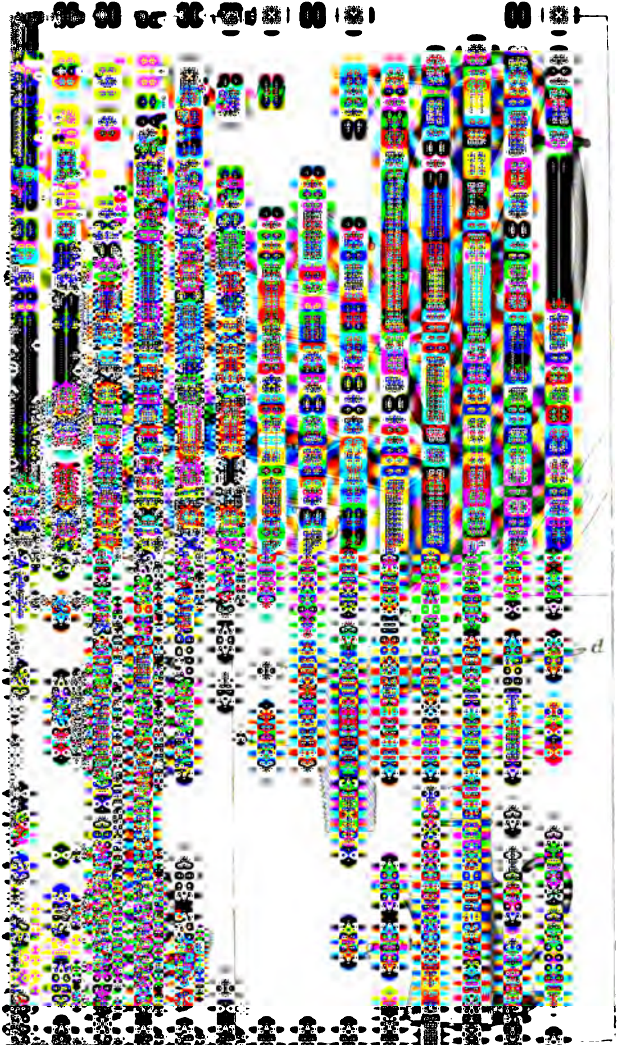

[illegible] 8, 390.

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prefer undressed meal, and in that case the dressing apparatus may be dispensed with. The sketch shown at *fig.* 101, gives a view of the flour-mill for private use, with the drawer open in which the flour is deposited. The mill consists of the ordinary hopper and *steel* cylinder (A B), which are exactly similar in principle to the oat-bruisers so much used in the stable of late years. By this cylinder the wheat is ground, and only requires dressing to separate it into the various qualities which are desired. This dressing is effected at the same time as the grinding by a horizontal cylindrical sieve, extending from (D) to (E), and worked by a strap, which passes also round a pulley from the wheel above. The flour is carried into it by a bent tube, to which it is admitted at (C), and the sieve has a slight inclination towards the end (E), so that as it revolves, the flour in it is gradually carried on to that extremity. Being covered with a sifting material with different degrees of coarseness, gradually increasing in this respect from (D) to (E), it follows that as the flour travels on towards (E) it deposits its fine flour, or "firsts," in the division (F) of the drawer below; the "seconds" being thrown into the next compartment (G), the "thirds" into (H), and the bran into (I). If, however, only one kind of flour, with the bran removed, is desired, two of the divisions are taken out, namely, those on each side of the compartment (G), and then the flour, though deposited in different degrees of fineness, has only to be mixed up together to constitute what is wished; or, if "firsts" and "seconds" only are desired, then the division between (G) and (F) is removed with a similar result. The labour of working this mill is, however, very considerable; and the flour will cost in grinding about the same as the price charged by most millers, namely, 6d. per bushel; or of course less, if the labour is not valued at the ordinary rate. But by its use there is a certainty of having a genuine article, which cannot be the case with wheat sent to the public mill, in which, however good the wheat sent in may be, the flour returned does not generally correspond, as it is not possible to keep small quantities separate, and therefore the sack of wheat goes into the general stock, and a proportionate return is made also from the day's grinding without any reference to the individual grain sent.

PRICE OF FLOUR-MILL WITH CASE-HARDENED CYLINDER.

		£	s.	d.
1.	Without dressing apparatus, to grind 1 peck per hour ...	3	0	0
2.	Without dressing apparatus, to grind 1½ peck per hour ...	4	10	0
3.	Ditto ditto, 1 bushel	5	10	0
4.	Ditto ditto, 2 bushels	7	10	0
5.	With dressing apparatus, to grind half a bushel per hour	8	0	0
6.	Ditto ditto, to grind 1 bushel ...	10	0	0
7.	A sieve to be used separately for removing the bran ...	0	7	6

A new mill should be cleaned by grinding a handful of corn to get rid of the dust, steel-filings, &c.

1239. THE OVEN comes next in importance, and it may be either a brick oven or an iron one attached to, and heated by, the ordinary grate; or the suspended oven lately introduced by Mr. Ball, of New Oxford-street. The construction of the brick oven is too well-known to need description; or, if unknown to the reader, it is part of the regular work of every village mason or bricklayer. The iron oven at the side of the grate, if of a large size, will bake a couple of loaves on each shelf; but they are seldom equally baked on both sides, and the result is not to be compared with the brick oven. Iron ovens are also made to be heated with a separate fire and flue, but even they are not good bakers of bread. Gas ovens do not answer well for bread, as they dry it too much by the draught of air necessary for the proper combustion of the gas. Ball's oven is merely a circular iron oven suspended to a bottle-jack in front of the fire with a reflector above and below. This oven bakes a single loaf beautifully, but it requires a considerable addition to the kitchen-fire, even in the winter; and if used in the summer, the expenditure of coals, *per loaf*, is very much greater than for the side-oven or that made of brick. In heating this last, fagots of brushwood are the best fuel; next to which is quick-burning coal, leaving but little ash. The object is to have a lively and somewhat strong fire, so that the oven may be heated in from fifteen to twenty-five minutes, and retain its heat sufficiently long. If intended for a succession of bakings, a brick oven may be heated a little longer than this; and then after taking out the fuel and sweeping the floor, shut the door so as to diffuse the heat throughout the bricks, by which means it lasts hot a much longer time. The experienced baker knows in a moment when his oven is heated by the effect on his face, and this can scarcely be described. It should be sufficiently heated about twenty minutes after the dough is ready to be made up, when the fire should be taken out, and the floor of the oven wiped out quite clean. While this is going on the loaves are being made up, and they should be ready to put into the oven as soon as possible afterwards. Quartern loaves take, on the average, about two hours to bake; but the door of the oven should be removed before that time to examine them. Half-quarterns take nearly an hour and a half, and smaller loaves or cakes still less.

1240. THE KNEADING-TROUGH, OR PAN, THE BOARD, and other utensils, cost very little. An earthen pan, glazed inside, is all that the cottager really requires, provided it is large enough to hold the quantity of bread which is to be baked. The regular kneading-trough is an oblong square wooden box, with a lid to it; but the pan answers every purpose, and is also less liable to absorb moisture, which afterwards becomes sour.

SUB-SECT. B.—HOME-MADE BREAD.

1241. At pages 280 to 284, baker's bread has been described, and the method of making it differs little from that adopted in home-baking. The first thing to be done is to select the flour, and decide upon the kind which is to be used. There is not the slightest doubt in my mind that undressed wheat-flour is most suited to the stomach of man, and will support him better under all circumstances than any other kind. It is also more nourishing; and for children, particularly, is better suited, because it contains in the bran a larger proportion of the bone-making elements. These facts are now so clearly established upon scientific principles, that they are generally acknowledged. But when the stomach has long been accustomed to fine bread it will not bear the irritation of the bran, and in such a case finer flour must be chosen; that called "firsts" need never be fixed upon, as the "seconds" will agree with any stomach. Where economy is much studied, Indian-meal may be mixed with wheat-flour with advantage, as it is very nearly as nourishing, and costs very much less money. Rice and potatoes mixed with flour make an equal *bulk* and *weight* of bread at a less price, but though they satisfy the appetite as well as wheat-flour, they do not supply the wants of the system; and the labouring man who expects to be able to work upon bread made with them as well as upon good wheaten bread will be greatly disappointed. Nevertheless, for a family of children, a shilling's worth of bread made in this way will go farther than an equal value of wheaten bread; though if these same children were fed upon equal *weights* of the two for equal consecutive periods, the difference would be very manifestly in favour of the pure wheat. Boiled rice and potatoes contain plenty of nourishment of one kind, namely, starch; but they have scarcely a vestige of those nitrogenised principles which go to build up the muscles and bones. But for those families where meat, or bacon, or milk, or any kind of animal food, is used in any quantity, potatoes and rice may be mixed with wheat-flour to a certain extent without injury, inasmuch as these animal-foods contain nitrogen enough for the demands of the system. The housekeeper will therefore remember—1st, that for hard work there is no bread like wheaten bread; 2ndly, that children do better with a liberal supply of bread made of wheat and rice, or wheat and potatoes, than with a scanty quantity of wheaten bread; 3rdly, that when plenty of animal food is to be had, these last-mentioned breads, or that made of the seconds wheat-flour and Indian-meal, is quite nourishing enough for all ordinary purposes, and considerably cheaper in price.

1242. THE METHOD OF MAKING WHEATEN BREAD, in quantities adapted to ordinary families, is as follows:—Take two pecks of flour, put it in a deep pan or trough, and make a deep hole in the middle, then take half a pint of good fresh yeast, or either of those given at par. 838 or 1235, mix it well up in half a pint of warm water, and pour it into the hole made in the flour. Next, take a spoon and work it round the outside of this central pool of water, so as to bring into it by degrees enough of the flour to make a thin paste or batter, which should be well mixed up without breaking down more than enough of the surrounding flour. Lastly, take a handful of flour and scatter over the top of this, upon which a thick cloth is to be laid, the flour preventing its sticking to the paste. The whole must now be put by to rise, either near the fire if in cold weather, or at a distance if in the summer. When the batter has risen enough to crack the layer of flour scattered over it, the "sponge" is sufficiently risen, and it may be formed into *dough*, thus:—Begin round the central hole as before, but using the hand instead of a spoon, and working the flour into the batter, at the same time adding more lukewarm water, until it is sufficiently moist, or, for some kinds of bread, milk instead. A quarter of a pound of salt is to be incorporated, either in the kneading or by dissolving in the water. When all is mixed together, the dough still requires to be well kneaded, in order to mix the fermented batter with the rest of the flour, and to get rid of the lumps of the latter, which would otherwise remain unmixed with water. The dough must, therefore, be well worked with the fists and heels of the hands, rolling it over and pressing it out, then folding it up and pressing it out again, until it is completely mixed and formed into a stiff yet tough dough. The bakers often use their naked feet for this operation, and there is no reason why feet should be more uncleanly than hands; but it is not desirable to imitate this operation in our own kitchens. When the dough is thus made up, it is rolled into a lump, and put into the trough again, well floured on the surface to keep it from sticking; and there it should remain for about twenty minutes, when it may be divided into portions suited to the size of the intended loaves. By this method of making bread the cost is as follows:—

(*a*) FINE WHEATEN BREAD.

	s.	d.
28 lb. of flour (firsts)	6	3½
Half a pint of yeast...	0	3
Baking...	0	6
	7	0½

Producing nine loaves of 4 lb. each, at 9½d. per loaf.

(*b*) SECONDS WHEATEN BREAD.

	s.	d.
28 lb. of flour (seconds)	5	8½
Half a pint of yeast	0	3
Baking	0	6
	6	5½

Producing nine loaves of 4 lb. each, at 8½d. per loaf, instead of 9d., the current rate at the baker's, with flour at this price.

(*c*) IF AMERICAN FLOUR is used, a greater weight of bread will be produced, and the flour also costs less (see par 811).

(*d*) BROWN BREAD.—If wheat is ground at home, and the flour made into bread undressed, in the same way as is described in the above directions, the quartern loaf will cost as follows, supposing wheat to be at a corresponding price, that is, at 8s. 6d. per bushel:—

	s.	d.
Half a bushel thus ground will produce 30 lb. of flour, for ...	4	3
Grinding	0	3
Yeast	0	3
Baking	0	6
	5	3

This will make nine and a half loaves of 4 lb. each, being at a cost of 6½d. per loaf.

(*e*) TO MAKE MIXED BREAD OF WHEAT AND RICE.—Take one pound and a half of whole rice (Carolina is best, but good Patna will do), boil it gently over a slow fire in three quarts of water for five hours, till it can be beaten into a smooth paste; mix this while warm with fourteen pounds of flour, adding at the same time the usual quantity of yeast (half a pint) and of salt (a quarter of a pound); let the dough stand by the fire, if cold weather, to rise, and it will produce when baked from twenty-eight to thirty pounds of good and sweet white bread—say, seven loaves of 4 lb. each.

COST OF RICE AND WHEATEN BREAD.

	s.	d.
1½ lb. of rice	0	4¼
14 lb. of flour (seconds)	2	10¼
Yeast	0	3
Baking	0	6
	3	11½

This produces seven loaves of 4 lb. each, at a cost of about 6¾d. per loaf.

(*f*) BREAD COMPOSED OF WHEAT AND INDIAN-MEAL is made as follows:—Take of Indian-meal seven pounds, pour upon it four quarts of boiling water, stirring it all the time; let it remain till lukewarm, then mix it with fourteen pounds of fine wheat-flour, to which a quarter of a pound of salt has already been added; make a depression in the surface of this mixture, and pour into it two pints of yeast, which must be thickened to the consistence of batter with some of the flour; let it stand all night, when the whole should be well kneaded, and allowed to stand for three hours. It may now be divided into loaves, which are better baked in tins, letting the dough remain in them half an hour before putting them in the oven. This will make twenty-eight pounds of good, wholesome, but rather sweet bread.

COST OF BREAD COMPOSED OF INDIAN-MEAL AND WHEAT.

	s.	d.
14 lb. of good flour (seconds) ...	2	10¼
7 lb. of Indian-meal	0	10
Yeast	0	3
Baking	0	6
	4	5¼

Producing seven loaves of 4 lb. each, at a cost of 7½d. per loaf.

(*g*) POTATO AND WHEATEN BREAD is made by boiling five pounds of good mealy potatoes till floury, then peel, mash fine, and mix them with as much cold water as will allow them to pass through a coarse sieve, the unbroken lumps being rejected to be again mashed and returned to the sieve. This is to be mixed with the yeast, and put into fourteen pounds of flour, in the same way as with rice (see *e*).

COST OF POTATO BREAD.

	s.	d.
5 lb. of potatoes	0	4
14 lb. of flour (seconds)	2	10¼
Yeast	0	3
Baking	0	6
	3	11¼

Producing 26 lb. to 27 lb. of bread—say, six and a half loaves, 4 lb. each, at 7½d. per loaf.

(*h*) SAGO BREAD.—The following is said to be a good and economical plan:—Two pounds of sago are to be boiled in three quarts of water to one quart, which is then to be mixed with a pint of yeast, and together they are to be poured into twenty-eight pounds of flour and made into bread in the usual way (see *e*). Sago is not more nourishing than rice or potatoes; nor does it produce a greater quantity of bread.

COST OF SAGO BREAD.

	s.	d.
1 lb. of sago	0	3
14 lb. of flour (seconds)	2	10¼
½ pint of yeast	0	3
Baking	0	6
	3	10¼

This quantity will produce six and a half loaves, of 4 lb. each, being at the rate of a trifle more than 7d. per loaf.

(*i*) UNFERMENTED BREAD.—It has been supposed by many well-informed persons, that bread made without yeast is more wholesome, more nourishing, and more economical, than that raised by its agency in any of its forms. The plan was first advocated in the year 1816, by Dr. Thomson, Professor of Chemistry in the University of Glasgow, since which time it has gained considerable ground in the opinion of a certain portion of the public. The originator and his followers assert, that "the degree to which the fermentation of the dough is carried before it is put into the oven, likewise affects its digestibility. If the fermentation of the dough be carried far enough, there is no doubt that not only is the alimentary matter by so much diminished, but the digestibility of the bread is lessened in the same proportion. Such bread will have undergone so much more of the *acetous* fermentation, and will be, by so much, more likely to derange the stomach, and to be with difficulty assimilated." Here two things are taken for granted, which are not allowed by the other side, who allege—1st, that the fermentation in ordinary bread-making is *not* allowed to proceed far enough to do the above mischief; and, 2nd, that *acetous* fermentation is not developed, but, on the contrary, *alcoholic*. These facts, if proved, cut the ground from under the feet of the advocates of this method, since it is clear that they would then be without any *theoretical* case. *Practically*, I am confident from long experience, that bread made with good yeast is more *wholesome* than that made with acid and soda, and also more *economical*, or at all events as much so. It is a fallacy to assert, that unfermented bread produces a greater weight of the article desired, *if both are equally spongy*. It is quite true, that as it is often used with a texture more like hard dumplings than sponge, and containing a large amount of water, the produce of a given weight of flour will weigh more than if well made into good fermented bread. But if a sufficient quantity of acid and soda are used so as to raise the bread properly, and allow it to be baked into a wholesome condition, the weight will correspond with that given for fermented bread (paragraph 1242), or sometimes will even fall rather below that amount. But in that case the bread is too salt for most tastes, and I believe too much so for most stomachs, developing thirst to a disagreeable and injurious extent, and containing in fact double the usual amount. It is commonly stated that a sack of flour will, by the soda method, produce from 105 to 108 four-pound loaves, while we know that the fermented bread from that quantity is seldom more than 90 loaves of the same size. From actual experiment, however, I am satisfied that this is not the case with no more than one ounce each of soda and acid to fourteen pounds of flour (seconds), or an ounce and a half to undressed meal; in either case the bread being heavy. For a long time I believed in the accuracy of these assertions, and used the unfermented bread for many purposes, considering it not only wholesome but economical; but after careful and repeated examinations of the samples of bread, and testing its effects upon the stomach, I am quite satisfied of the accuracy of the conclusion at which I have arrived. The public bakers are too ready to seize upon any plan which would enable them to increase the weight of their bread, that being the only element upon which they are legally entitled to charge for it; and if the quality were as good as it is pretended, the trouble being well known to be lessened by this practice, it is clear that self-interest would teach them to adopt it. But if they were to offer such to the public as ordinary bread, they would lose their customers almost to a man. It is really only under the shadow of the names of Drs. Thompson, Robertson, and others that this plan has maintained its ground, its advocates believing that it must be economical and wholesome because they are told so by those gentlemen. Two things, however, are required to make bread wholesome—1st, materials suited to nourish the frame; and 2nd, such a mechanical arrangement of them as will admit the solvent juices of the stomach to its interior, this being the object of the spongy texture given by the rising of the dough. If, therefore, the acid and soda fail to do this, and in consequence of such failure leave the bread so full of water and so heavy as to be unfit for digestion, although it may weigh more, it will not only afford no more nourishment to the body, but it will disagree with the stomach by giving it too much to do. There may be some utility in increasing the weight of bread by means of water, provided the bulk also is enlarged, because then the hungry stomach is filled and satisfied, if only for a time; but a pound of good, well-made, and spongy bread is always better than a pound and a quarter of heavy doughy bread, containing the same quantity of nourishment added to an extra proportion of water. But as the public like to judge for themselves, the following formula is given for making this bread:—

TO MAKE UNFERMENTED BREAD (WHITE). Take 12 lb. of flour, and put it into an earthen pan, where it is to be thoroughly mixed by the hand, or a sieve, with 1½ oz. of soda. Then mix 1¼ oz. of hydrochloric acid with six pints of water, using a wooden stick for the purpose; pour the acid and water into the flour, and incorporate the one with the other as quickly as possible. The dough must be kneaded quickly, and made up at once into loaves, using tins or earthen moulds for the purpose; or, if desired, baking them in the ordinary way; but as the dough is less tough than usual, the loaves do not keep their shape well. For the same quantity of undressed flour, 2 oz. of soda and acid will not be too much. The following, according to my experience, is the result in WEIGHT and COST:—

UNFERMENTED BREAD.

	s.	d.
12 lb. of flour (seconds)	2	4½
1½ oz. of bicarbonate of soda ...	0	1½
1¼ oz. of hydrochloric acid ...	0	1¼
Baking	0	5
	3	0¼

This produces 16 lb. of bread, or four loaves of 4 lb. each, at 9d. per loaf.

Independently of the above objections founded on practical experiments, it is believed that the hydrochloric acid in common use contains some appreciable proportion of arsenic, obtained from the metallic salts which have been used in its decomposition and re-formation. Now, I do not myself believe in the injurious effects of arsenic in these infinitesimal doses; but still they are considered injurious by many people, and therefore it is right that they should be aware of the existence of the drug in this acid.

1243. THE RELATIVE PRICES of these breads will therefore be as follows:—

RELATIVE COST OF HOME-MADE BREADS, per 4-lb. loaf.

	s.	d.
Pure wheaten bread (first flour)	0	9¼
Pure wheaten bread (seconds) ...	0	8¼
Brown bread (undressed flour) ...	0	6¾
Rice and wheaten bread, mixed	0	6¾
Indian-meal and wheat-flour ...	0	7½
Potatoes and wheat-flour	0	7½
Sago bread	0	7
Unfermented bread (seconds) ...	0	9

This is calculated at—wheat-flour (firsts), 63s.; (seconds), 57s. per sack. Wheat at 8s. 6d. per bushel, rice and sago at 3d. per lb., Indian-meal at 35s. per sack, and potatoes at ½d. per lb.

1244. SUMMARY ON THE ARTICLE BREAD.—On a careful examination, therefore, of the foregoing data, the economist of money and health will, I believe, come to the conclusion, that in order to get *good* bread at the lowest cost he had better either grind his own wheat, or purchase wholesome flour and make it into bread at home. In purchasing his flour he should, if possible, select the American flour *as imported;* and as it will keep for months or years with advantage, he may always do this through some flour merchant or broker in London, Liverpool, or Bristol. If the meal is somewhat clodded it is easily broken up by the hand, unless it is damaged by sea-water, which, if sold as of the best quality, it ought not to be. Brown bread should always be made of flour ground at home, as the millers seldom keep the wheat which is sent them to grind separate from other kinds; and if the best is bought for the purpose, the chances are that what is sent home as its produce in brown meal, is composed partly of it, but in great measure of other samples. This brown bread, made with good brewer's yeast, or German yeast, or even with the patent yeast, will go farther, and cost less than any other wheaten bread; but if, as I before remarked, children are to be fed, rice, Indian-meal, or potatoes, may be mixed with "seconds" flour to advantage in all respects.

1245. When bread has been kept so long as to be dry and unpalatable, it is only necessary to steep it in water for two or three minutes, and then take it out and let it stand for an hour for the water to permeate the whole loaf equally. After this, put it in a brisk, but not *very* hot, oven for about a quarter of an hour, and it will come out with all the sponginess, crispness, and flavour of "new bread," and may be kept accordingly.

Sub-sect. C.—Fancy Bread, Rolls, Muffins and Crumpets.

1246. These very delicious articles of diet are intended chiefly for the breakfast table, where they are prized highly by all those who indulge in luxuries at this meal. French bread, I believe, to be very wholesome to all those who are not troubled with acidity; but when that is the case, it should be avoided, and the ordinary English bread, toasted, should be substituted for it. Rolls, crumpets, muffins, and buttered toast are in the same category; but dry toast, alluded to above, is one of the most wholesome articles for the weak stomach which can be put before the invalid. The following receipts for making these several breakfast delicacies will be found useful as well as economical, though certainly less so than the common "staff of life."

1247. Dry Toast.—Cut very thin slices of bread from a loaf not less than two days baked; put either one or two at a time on the toasting-fork, taking care not to hold them too near the fire; they should be just warmed on each side, then turned, and when sufficiently done on one side they should be turned again. And when they are thoroughly toasted, they should be either placed upright on a plate, one against the other, or put in the toast-rack; but they should be kept near the fire until required for the table. Toast should never be made long before it is sent to table, or it becomes tough and leathery. Some people cut off the crust.

1248. Buttered Toast.—The bread should be cut thicker than for dry toast, from a square loaf, taking care to toast the whole round, which should be done like the preceding receipt. When the first slice is toasted it should be buttered on one side, then cut into quarters and placed upon the plate before the fire, while the next slice is toasted, buttered, and cut, when it also must be placed upon the first piece; and so on for as many slices as are required. The crust should properly be cut off before the bread is toasted, and carefully put away, as it will make a very good bread pudding, and ought not to be wasted.

1249. Yorkshire Girdle Cakes are made with three-quarters of a pound of flour, into which two ounces of butter and a little salt should be well rubbed. Mix these with as much good cream as will make a stiff paste, and bake on a girdle.

1250. Crumpets.—To a quart of warm milk and water add a table-spoonful of good yeast and two eggs well-beaten; mix with these, by degrees, as much flour as will make a thick batter, then heat a very small frying-pan, rub it with a little butter, and pour in a large spoonful of the batter, which will spread over the pan. Watch the under-side by raising it with a fork, and when brown turn it; watching that also in a similar way. When wanted for use they must be toasted, well buttered, and sent up hot.

1251. Pikelets.—Beat well two eggs, one large table-spoonful of yeast, and a little salt and nutmeg; mix with them a pint of warm new milk, and beat into them, by degrees, two pounds of flour, continuing to beat it for ten minutes; after all is mixed, let the mixture remain before the fire for two hours to rise; bake in small cakes on a girdle, butter them hot, and serve up three or four on a plate.

1252. Muffins.—Mix two pounds of flour with two eggs, two ounces of butter melted in a pint of milk, and four or five spoonfuls of yeast; beat it thoroughly, and set it to rise two or three hours. Bake on a hot hearth in flat cakes. When done on one side turn them.

1253. Bread Muffins.—Take four thick slices of *baker's bread*, and cut off all the crust. Lay them in a pan, and pour boiling water over them; but barely enough to soak them well. Cover the bread, and after it has stood an hour, drain off the water, and stir the soaked bread till it is a smooth mass; then mix in two table-spoonfuls of sifted flour, and half a pint of milk. Having beaten two eggs very light, stir them gradually into the mixture. Grease some muffin-rings; set them on a hot girdle, and pour into each a portion of the mixture. Bake them brown; send them to table hot; pull them with the fingers, and spread on butter. They will be found an excellent sort of muffin; very light and nice. (An American receipt.)

1254. Breakfast Cakes.—Take nearly a pint of *warm* new milk, with half an ounce of butter melted in it, two eggs, two spoonfuls of light yeast, and a little salt; mix first with two pounds of flour the milk and butter, then the eggs (well beaten), yeast, and salt; cover it up, and set it before the fire for an hour to rise; then roll it into round cakes, about an inch in thickness. Put the cakes on tins before the fire to rise for half an hour. A few well-dried currants added to the above will make light buns, which may be toasted.

1255. Rolls.—Take nine ounces of flour and one ounce and a half of butter, and rub them together; then take four tea-spoonfuls of yeast, half a cup of milk, the yolk of one egg beaten a little, and mix them all together; pour them on the flour and butter, working the whole very little with the hand. This quantity makes four or five rolls. Make them up, put them to rise before the fire, and when risen bake them in a quick oven. With a good fire they may be made and baked in little more than a quarter of an hour. The quicker they are mixed and baked the better.

1256. **To Make Excellent Rolls.**—Warm one ounce of butter in half a pint of milk; add to it one spoonful and a half of yeast and a little salt; then put two pounds of flour into a pan, and mix with it the above ingredients; let it remain for an hour to rise, knead it well, and bake in a quick oven.

1257. **American Potato Rolls.**—Take fine large potatoes, boil, peel, and mash them well. Then rub the mashed potatoes through a sieve. To each potato allow a pint of sifted flour; a table-spoonful of strong fresh yeast; a gill of milk-warm water; a salt-spoon of salt; the yolk of an egg; and a bit of fresh butter about the size of a large hickory-nut. Mix together in a large broad pan the flour, the mashed potatoes, and the salt. Make a hole in the centre of the mixture, and pour into it the yeast mixed with the warm water. Sprinkle a little flour over the top, and mix in a little from round the sides of the hole. Cover it with a clean towel, and over that a flannel, and set it near the fire to rise. When the dough is quite light, and cracked all over the surface, knead in the butter and also the yolks of eggs, having previously beaten them well, and add a small tea-spoonful of soda dissolved in a little warm water. Then divide the dough into equal parts, make it into long-shaped rolls, and lay them in a tin or iron pan sprinkled with flour. Cover them, and again set them to rise in a warm place. When perfectly light (which should be in about an hour), set the pan in the oven, and bake the rolls brown. They are best when quite fresh. Pull them open with the fingers, and eat them with butter.

1258. **French Bread.**—With a quarter of a peck of fine flour mix the yolks of three, and whites of two, eggs beaten and strained, a little salt, half a pint of good yeast, not bitter, and as much milk, a little warmed, as will work it into a thin light dough; stir it about, but do not knead. Have ready three quart wooden or iron dishes or tins; divide the dough among them. Set to rise, then turn them out into the oven, which must be quick. Rasp when done.

1259. **To Make French Rolls.**—Two pounds of best flour, three eggs, six spoonfuls of yeast, one pint of milk, and a little salt; cover it up warm, and set to rise for half an hour; then make the rolls, and put them into a quick oven, and let them stop in for half an hour. If not light enough, more yeast may be added, if you can do so without making them bitter.

1260. **Sally Lunn Rolls.**—Two pounds of fine flour, two small spoonfuls of yeast, with a little warm water; this must be put to rise for half an hour. Put two ounces of butter and the yolk of an egg in as much new milk as will make it a proper stiffness; mix all well up, and put it into cups; when risen, bake them in rather a quick oven.

1261. **Delicious Breakfast Rolls.**—Rub into one pound of flour one ounce of butter, and one tea-spoonful of sugar, with a little salt; mix into a *light* paste with new milk lukewarm, and containing one table-spoonful of yeast; let the paste stand three-quarters of an hour (or a little longer sometimes) till it rises; then make into small rolls, either egged over or not, and bake. An egg to each pound of flour is an improvement, in which case a part of the white is reserved for egging over.

Sub-sect. D.—Cakes.

1262. The essential difference between these and the preceding articles is not very manifest, inasmuch as some of them are sweetened and made up with eggs and milk, in addition. The only distinguishing feature is the use to which they are severally applied, cakes being intended to be eaten by themselves, while crumpets, muffins, and the corresponding articles are used with butter or some flavouring material.

1263. **Currant Cake.**—Take two pounds of flour, half a pound of butter rubbed in the flour, half a pound of moist sugar, a few carraway seeds, three or four table-spoonfuls of yeast, and a pint of milk made a little warm. Mix all together, and let it stand an hour or two at the fire to rise; then beat it up with three eggs and half a pound of currants. Put it in a tin, and bake two hours in a moderate oven.

1264. **A Light Seed Cake without Butter.**—The yolks of six and whites of three eggs should be beaten well for half an hour; then mix with them four ounces of powdered loaf sugar, eight ounces of dried flour, and a few carraway seeds. Stir the whole well together, and put it in a tin or basin lined with writing-paper buttered. Half an hour will bake it, if the oven be quick.

1265. **A Seed Pound Cake.**—One pound of butter, melted, one pound of sifted sugar, one pound of flour, eight eggs, two ounces of carraway seeds, and half a tea-spoonful of soda put in just before going to the oven. The whites and yolks of eggs to be beaten separately.

1266. **Plain Soda Cake.**—Take one pound of flour, half a pound of moist sugar, and rub in half a pound of butter, lard, or dripping; then take four eggs well beaten, a teacupful of milk a little warm, and half a tea-spoonful of soda dissolved in the milk. Mix all together, and put it into the oven immediately; two hours will bake it in a quick oven.

1267. Soda Cake with Currants.—Six ounces of butter rubbed into one pound of flour, half a pound of sugar, half a pound of currants, three-quarters of an ounce of carraway-seeds, a tea-spoonful of soda dissolved in a little boiling water, and mixed with new milk to make a pint; if wanted richer add three eggs. Bake one hour and a half, putting it into the oven as soon as possible after mixing.

1268. A Family Cake Made from Dough with half a pound of raisins, three-quarters of a pound of currants, one ounce of candied peel, half a pound of dripping, and half a pound of moist sugar, mixed with a quarter of a peck of dough, already kneaded, and set to rise for half an hour. The dripping, if mellow (not melted), will rub into the dough with the other ingredients. Let it stand to rise for another quarter of an hour before being baked. Use a table-spoonful of yeast (and if you like, a little carbonate of soda), when made with flour.

1269. An Excellent Common Cake.—Take five ounces of dripping or lard, five ounces of currants, or half a pound of raisins, eight ounces of sugar, and one egg, to two and a half pounds of flour. Either a table-spoonful of yeast or a tea-spoonful of carbonate of soda must be added.

1270. Excellent Sponge Cake.—Take half a pound of sugar, five ounces of flour, six yolks and four whites of eggs; *well* beat the yolks and whites separately, then add to the latter the sugar, yolks, and flour, with the grated peel and juice of half a lemon. Bake in a quick oven.

1271. Lemon Cake.—Take half a pound of powdered loaf sugar, half a pound of flour well dried, the grated rind of one lemon, two ounces of butter, two well beaten eggs; mix all together and roll out thin, lay it on a tin, and when baked, cut it in small squares or lozenge shapes.

1272. Sally Cake.—Beat ten eggs, leaving out half the whites, with the rind of two small lemons, or one large lemon, grated fine; add one pound of lump sugar rolled very fine. Then mix in half a pound of flour; just before it goes to the oven, stir in the juice of the lemons. Butter the tin well, and bake two hours. Seville oranges can be used instead of lemons.

1273. Rice Cake.—Have ready three ounces of flour, three ounces of ground rice, six ounces of sugar finely sifted, five eggs (whites of two only), and the rind of a lemon, grated. Beat the eggs well together, and then beat in the sugar with them, and the flour, &c. Bake from three-quarters of an hour to an hour and a quarter, according to the heat of the oven.

1274. Rice Pound Cake.—One pound of rice flour, one pound of butter, and one pound of sifted lump sugar, are to be beaten well together, with the yolks of ten eggs, and put into a mould and baked.

1275. Small Rice Cakes.—To one pound of lump sugar, sifted, add half a pound of flour, half a pound of rice flour, the yolks of eight and the whites of six eggs, and six ounces of butter; beat them well together, and bake in patty-pans, in a quick oven. Half the quantity will make about fourteen cakes.

1276. Indiana Batter Cakes (American). Sift into a pan three full pints of yellow Indian-corn meal; and add a large table-spoonful of fresh lard, or of nice roast-beef dripping well cleared from fat. Add a large tea-spoonful of bicarbonate of soda, dissolved in a little warm water. Next make the whole into a soft dough, with a pint of cold water. Afterwards thin it to the consistence of a moderate batter, by adding, gradually, not quite a pint and a half of warm water. When it is all mixed, continue to stir it well for about half an hour. Have ready a girdle heated over the fire, and bake the batter on it, in cakes, turning them when brown; send them to table hot, and eat them with butter or molasses. These cakes are very light and good, and convenient to make, as they require neither eggs, milk, nor yeast. They may either be baked as soon as mixed, or they may stand for an hour or more.

1277. Kentucky Batter Cakes.—Sift a quart of yellow Indian meal into a large pan; mix with it two large table-spoonfuls of wheat-flour, and a salt-spoonful of salt. Warm a pint and a half of rich milk in a small saucepan, but do not let it come to a boil. When it begins to simmer, take it off the fire, and put into it two pieces of fresh butter, each about the size of a hen's egg. Stir the butter into the warm milk till it melts, and is well mixed. Then stir in the meal, gradually, and set the mixture to cool. Beat four eggs, very light, and add them, by degrees, to the mixture, stirring the whole very hard. If you find it too thin, add a little more corn-meal. Have ready a girdle heated over the fire, and bake the batter on it, in the manner of Indiana batter cakes. Send them to table hot, and eat them with butter, to which may be added molasses or honey.

1278. Rye Batter Cakes (American).—Beat two eggs very light. Mix them, gradually with a quart of lukewarm milk, and sufficient rye-meal to make a batter as thick as for batter cakes (par. 1276). Then stir in a large table-spoonful of the best brewer's yeast; or twice that quantity if the yeast is home-made. Cover it, and set it to rise in a warm place. If too thin, add more rye-meal. When quite light, and covered on the surface with bubbles, bake it on a girdle, in the manner described at paragraph 1276. Butter them, and eat them warm, at breakfast or tea.

1279. FINE HONEY CAKES (AMERICAN).—Mix a quart of strained honey with half a pound of powdered white sugar, and half a pound of fresh butter, and the juice of two oranges or lemons. Warm these ingredients slightly, just enough to soften the butter. Then stir the mixture very hard, adding a grated nutmeg. Mix in, gradually, two pounds (or less) of sifted flour. Make it into a dough, just stiff enough to roll out easily. Beat it well all over with a rolling pin. Then roll it out into a large sheet, half an inch thick; cut it into round cakes with the top of a tumbler (dipped frequently in flour), lay them in shallow tin pans, slightly buttered, and bake them well.

1280. MOLASSES CAKES (AMERICAN).—Cut up a quarter of a pound of fresh butter into a pint of West India molasses. Warm it just sufficiently to soften the butter, and make it mix easily. Stir it well into the molasses, and add a table-spoonful of powdered cinnamon. Beat three eggs very light, and stir them gradually into the mixture, in turn with barely enough of sifted flour (not more than a pint and a half) to make it about as thick as pound-cake batter. Add, at the last, a small or level tea-spoonful of pearlash, or a full one of soda, dissolved in a very little warm water. Butter some small tin cake-pans, or patty-pans, put in the mixture, and set them immediately in the oven, which must not be too hot, as all cakes made with molasses are peculiarly liable to scorch on the outside.

1281. TO MAKE SMALL CAKES.—One pound of flour, half a pound of brown sugar, half a pound of butter, a little nutmeg, and as many currants as you please; rub the butter and sugar well into the flour, and mix it together with two eggs. Put it in small cakes and bake in tins.

Another Receipt.—Rub into one pound of flour a quarter of a pound of butter, with half a pound of pounded sugar; mix these up with milk, roll thin, and cut in shapes.

1282. LEMON CAKES.—Mix well together one pound of flour, half a pound of butter, one pound of sugar, two eggs, the rind of one lemon and the juice of two; then put small bits with a knife on a tin, and bake in a slow oven.

1283. LITTLE ROUGH CAKES.—Mix well together one pound two ounces of flour dried before the fire, half a pound of loaf sugar dried and sifted, a few currants, and half a pound of butter; take the yolks of five eggs and make all into a paste, roll into little cakes, and bake them on tins or paper. The rind of a lemon grated in will be found pleasant.

1284. QUEEN'S DROP CAKES.—Mix together one pound of flour, half a pound of currants, half a pound of sugar, four eggs, half a pound of butter, six drops of essence of lemon, and half a tea-spoonful of carbonate of ammonia; then bake without loss of time.

1285. IVANHOE CAKES.—Take one pound of flour, rub into it six ounces of butter, one pound of loaf sugar pounded, one ounce of sweet almonds, one ounce of bitter almonds pounded, and a little grated lemon peel; mix all together with three eggs, put it upon tins in pieces about the size of a walnut, and bake in rather a slow oven.

1286. GINGER CAKES.—Take three-quarters of an ounce of powdered ginger, one pound of fine flour well dried, three-quarters of a pound of the best Lisbon sugar, half a pound of butter; mix with water to a stiff paste, roll it out, cut out the cakes, and bake on a tin in a slow oven.

1287. GENUINE SHREWSBURY CAKES.—These are made with half a pound of flour, a quarter of a pound of sugar, six ounces of butter, one egg, and a little powdered mace and cinnamon. The butter and sugar are rubbed into the flour. The paste is rolled out to a moderate thickness, cut into round cakes and baked in a quick oven.

1288. ROCK CAKES.—Take one pound and a half of flour and one pound of butter, rub them together and add half a pound of loaf sugar, a quarter of a pound of currants, two ounces of candied peel cut small, and two spoonfuls of brandy; mix all well together; make into rough cakes and bake.

1289. GINGERBREAD.—Take one pound and a half of flour and rub into it three-quarters of a pound of butter, half a pound of sugar, three-quarters of an ounce of ground ginger; mix all together and make into a paste, with one pound and a quarter of treacle, and the rind of a lemon cut small. Spread it on the tins, and bake in a slow oven.

Another Receipt (*Richer*).—Melt in one pound of treacle half a pound of butter before the fire, stirring it occasionally; when nearly cold, add two ounces of candied peel, ginger to your taste (cin ounce will make it hot), add about one pound of flour to make it into a light paste, then put one pound of sugar; roll it immediately, and put it upon tins in a quick oven; when done it will be a dark brown.

1290. SMALL SCOTCH OATMEAL CAKES (BREAKFAST).—Put some Scotch oatmeal in a basin or bowl, take a jugful of boiling water, with half an ounce of salt-butter or lard melted in it, to make the cakes crisp. Pour this boiling hot over the meal, stirring it as quickly as possible into a dough, and then turning it out upon a baking-board, upon which it is to be rolled till it is as thin as it will hold together, when it is to be stamped into the shape of small round cakes. These are to be first placed on a girdle to make them firm, and afterwards toasted before the fire, alternately on each side, till they are quite dry and crisp.

1291. SMALL FLOUR SCONES FOR BREAKFAST (SCOTCH).—Take one pint of milk, and boil it with a small piece of fresh butter; when it boils, pour it over a pound and a half of flour in a bowl, stirring it quickly round and round, and adding water till it is the thickness of paste. Knead and roll it out to a thin paste, then stamp out small round scones (*Anglice*, cakes), and "fire" them on both sides on a girdle till they are heated through. They should be quite *white*, and served hot one above another, in a napkin, for breakfast.

1292. BATH BUNS.—Take two pounds of flour, well dried, rub in half a pound of butter, four eggs, and four spoonfuls of yeast; add as much new milk as will make it into a paste. Mix the ingredients till the mass appears light; put it by the fire to rise, and then add half a pound of powdered sugar and half an ounce of carraway seeds. When the dough has well risen divide it into the proper sizes for buns, and, just before set in the oven, strew coarsely-powdered sugar over the top.

1293. TO MAKE RUSKS.—With one pound of fine flour mix two ounces of loaf sugar, sifted. Beat an egg (two are better, if plentiful), and put to it two small table-spoonfuls of yeast. Melt two ounces of butter in half a pint of new milk, put it warm into the middle of the flour, and stir in as much as it will take up; then add the yeast and egg, and stir in as much more of the flour as it will moisten; cover it over with some of the remainder, and set it to rise. When risen, work it up into a paste, and cut it into narrow strips, and again into squares. Set them to rise on tins before the fire for more than an hour, till the oven is ready; bake them ten minutes. Dry them as there is opportunity, in a bread oven, when the bread is taken out, or other equally cool oven. It does not signify if they wait a day or two first. Keep them in a tin box and in a warm place.

1294. TOPS AND BOTTOMS.—The dough is made as for rusks, omitting the eggs and butter. Then, instead of dividing it into squares, make it up into little lumps, the size of walnuts, which treat in the same way, and when nearly sufficiently baked, split in half and bake again.

1295. CRACKNELS.—Mix with a quart of flour half a nutmeg grated, the yolks of four eggs, beaten with four spoonfuls of rose-water into a stiff paste, with cold water; then roll in a pound of butter, and make them into cracknel shapes; put them into a kettle of boiling water, and boil till they swim, then take them out, and place in cold water; when hardened, lay them out to dry, and bake on tin plates.

1296. ISLE OF WIGHT DOUGH NUTS.—Take three pounds of flour, rub in half a pound of butter and lard in equal proportions, add one pound of moist sugar and a little allspice, together with six eggs and four table-spoonfuls of yeast in sufficient milk to make it of the consistence of bread dough. Put it to rise four hours. To make it up, divide it in small portions, and in each put a few currants and candied peel, rolling them into balls. Have a kettle with sufficient lard to float them when boiling. Put a few in at a time, and boil till they are brown. They will take about ten minutes to boil each lot at first, but as you go on they will brown more quickly.

1297. AMERICAN SOFT CRULLERS.—Sift three quarters of a pound of flour, and powder half a pound of loaf-sugar. Heat a pint of water in a round-bottomed saucepan, and when quite warm, mix the flour with it gradually. Set half a pound of fresh butter over the fire in a small vessel; and when it begins to melt, stir it gradually into the flour and water. Then add by degrees the powdered sugar, and half a grated nutmeg. Take the saucepan off the fire, and beat the contents with a wooden spaddle or spatula till they are thoroughly mixed. Then beat six eggs very light, and stir them gradually into the mixture. Beat the whole very hard till it becomes a thick batter. Flour a paste-board well, and lay out the batter upon it in rings (the best way is to pass it through a screw-funnel). Have ready, on the fire, a pot of boiling lard of the very best quality. Put in the crullers removing them from the board by carefully taking them up, one at a time, on a broad-bladed knife. Boil but a few at a time. They must be of a fine brown. Lift them out on a perforated skimmer, draining the lard from them back into the pot. Lay them on a large dish, and sift powdered white sugar over them. Soft crullers cannot be made in warm weather.

Sub-sect. E.—Biscuits.

1298. **Biscuits** are too well known to need description. Unlike bread, they are made of a solid texture; and, in the case of captain's biscuits, with nothing but milk or water, and a very small quantity of butter or lard.

1299. **Wafer Biscuits.**—Add one ounce of butter and the white of one egg, well beaten, to one pound of flour; mix them with as much cream or good milk as will make a thick paste; work the paste up well till it is as fine as glass, then cover it over, and set it before the fire for twenty minutes; break it in pieces the size of a walnut, roll it out as thin as a wafer, using as little flour as possible in doing it. Bake about three minutes in a quick oven.

1300. **Wine Biscuits.**—Rub into a pound and a half of flour, well dried, four ounces of butter and three ounces of sifted sugar; beat well two eggs and mix with it, then a little water to make it a stiff paste; roll it out very thin, cut out the biscuits, and bake in a quick oven. Some prefer to beat it very well before rolling out. The sugar may be omitted.

1301. **Almond Biscuits.**—Take four ounces of sweet and two ounces of bitter almonds, blanch and beat them till smooth, then add one pound of loaf sugar, *not* sifted; mix all well together; beat the white of an egg to a strong froth, then mix it with the rest; bake in rough lumps on wafer paper, or writing paper will do if buttered to prevent sticking. A quick oven is necessary, and they should be done to a nice brown.

1302. **To Make Macaroons.**—Rub well together in a small mortar half a pound of sweet almonds and half a pound of lump sugar, then add the whites of six eggs, previously beaten; mix the whole together, drop them on wafer paper, shake a little sugar over them, and bake in a slow oven.

1303. **Gourock Rice Biscuits.**—Mix together one pound two ounces of flour, half a pound of butter, ten ounces of sifted sugar, six ounces of ground rice, half an ounce of sal-ammoniac, and a quarter of a pound of currants; then bake.

1304. **Water Biscuits.**—Into one pound of flour rub three ounces of butter, add a sufficient quantity of water to make it a stiff dough; well knead it, and roll it as thin as wafers; prick with a biscuit-pricker, and bake a very pale brown.

1305. **Orange Biscuits, or Little Cakes.** Boil whole Seville oranges in two or three waters till most of the bitterness is gone; cut them, and take out the pulp and juice; then beat the outside very fine in a mortar, and put to it an equal weight of double-refined sugar, beaten and sifted; when extremely well mixed to a paste, spread it thin on china dishes, and set them in the sun, or before the fire; when half dry cut it into what form you please, turn the other side up and dry that; keep them in a box with layers of paper. They are for desserts, and are also useful as a stomachic to carry in the pocket on journeys, or for gentlemen when shooting, or for those who have weak stomachs.

1306. **Volatile Biscuits.**—Mix one pound of flour, half a pound of loaf sugar, and a quarter of a pound of butter into a paste, with two eggs and a tea-spoonful of carbonate of ammonia dissolved in a little milk.

1307. **Ginger Biscuits.**—Take one ounce of powdered ginger, a quarter of a pound of butter, half a pound of moist sugar, three-quarters of a pound of flour, and a table-spoonful of milk; put all excepting the flour into a saucepan, stir it one way till it boils briskly; then put it in a bread-pan to cool, and when milkwarm mix the flour, gradually stirring it all the time; when sufficiently stiff roll it out, and bake the biscuits in a quick oven for a quarter of an hour.

1308. **Captain's Biscuits** are made with fine flour and new milk only, or with water and a *very little* butter instead, about a quarter of an ounce to seven pounds of flour; when the paste is made very smooth, divide it into small lumps and roll them out, after which they should be still further extended with the fingers, and pricked all over. They require from ten to fifteen minutes' baking in a rather brisk oven.

Sect. 8.—Fermented Liquors.

1309. **General Remarks.**—In the section devoted to the description of fermented liquors as made for sale, the principles of fermentation are described at some length, and the processes by which porter and beer are brewed, as well as those by which foreign wines are made. (See pages 313 to 328). It will, therefore, only be necessary here to give directions for the management of those fermented liquors which can be made at home to greater advantage than they can be bought, either in consequence of their high price or their bad quality, as supplied to the public. In wines and spirits it is impossible to compete with the wine and spirit merchant, in point of quality; for no efforts of the housekeeper, however accomplished she may be in the department which has received the name of the "still-room," will enable her to concoct French brandy, claret, champagne, hock, burgundy, or, in fact, any of the best foreign wines. But where their prices cannot be afforded she may be able to make what are called sweet-wines, which will serve the purpose of showing her hospitality, and which by some people are really preferred to all others. Some of them are very palatable, certainly, as ginger-wine, malt-wine, sparkling gooseberry, or rhubarb; but the majority are vile compounds of vinegar and sugar, the alcoholic fermentation being very imperfectly conducted, and passing into the acetous, to correct which large quantities of sugar are added. The subject, therefore, will be confined to the methods of making—1st, *home-brewed beer;* and, 2nd, *cider* and *home-made wines.*

SUB-SECT. A.—HOME-BREWED BEER.

1310. It cannot be pretended that porter, ale, or beer, can be brewed at home of better quality than is offered for sale by some of our best brewers. Nothing in the shape of malt liquors can be produced more bright, genuine, and wholesome than Allsop's or Bass's bitter and pale ales, as well as those of many other public brewers; but with regard to inferior qualities, such as table-beer and ale of moderate strength, suited to the regular consumption of a household, the home-brewed article may challenge competition, and will very often bear off the palm. Besides this, the price is considerably lower, as we shall presently see; and, as compared with the average quality of beer retailed at the public-houses, home-brewed is certainly far more wholesome and more palatable also. In the section treating of the brewing of beer for the purposes of sale, I have described the principles upon which it is there conducted, and it will, consequently, only be necessary here to allude to the practical details in which the brewing of beer at home differs from the method adopted by the public brewers.

1311. THE MATERIALS FOR HOME-BREWING are exactly the same—viz., malt, hops, yeast, water, and, in some cases, sugar and isinglass. These have already been fully described in par. 1034 to 1038. It may here be repeated, that quality is of the greatest importance in all brewing operations, consequently it does not answer to buy cheap articles, unless they are really so, as compared with better articles costing more money.

1312. THE UTENSILS have, at par. 1049 to 1060, also been described, with an allusion to the fact, that for private brewings a sherry-butt, cut in two, answers well enough for the purpose. The most economical charges for domestic plant are as follows, according to the scale upon which the brewing is to be conducted:—

NO. 1.—PLANT FOR BREWING TWO HOGSHEADS.

	£	s.	d.
Eighty-gallon tinned-iron boiler and setting	3	8	0
Sixty-gallon mash-tub... ...	1	10	0
Underback	1	0	0
Mash-strainer	0	5	0
Two buckets	0	6	0
Hop-back	0	8	0
Spigot	0	0	9
Coolers	2	0	0
Fermenting tun	2	0	0
Barrels	1	15	0
	£12	12	9

NO. 2.—PLANT FOR BREWING THIRTY-SIX GALLONS.

	£	s.	d.
Forty-gallon tinned-iron boiler and setting	2	10	0
Forty-gallon mash-tub and underback	0	18	0
Sieve	0	3	0
Cooler, and 36-gallon fermenting tun	0	15	0
Tap	0	0	9
Four 9-gallon or two 18-gallon casks	1	16	0
	£6	2	9

NO. 3.—FOR BREWING ONLY EIGHTEEN GALLONS OF BEER.

All that is required is a mash-tub contrived out of a small cask, with a false bottom, as shown in par. 1051. If the brewer has this, which he ought to be able himself to convert into what he wants, and a copper holding the quantity of water, he may always manage to find vessels of some kind to cool his beer in, provided only that he has ingenuity in adapting them. A washing-tub, although made deep enough to hold more beer than will cool readily, need not be filled more than four or five inches deep, and the beer will then cool as well as if in a regular cooler. In this way a pound will generally buy all that is requisite; as most poor men even have a boiler of some kind in their cottages, and an iron one will answer just as well for brewing as the most expensive copper.

1313. THE PROPER STRENGTH to brew the beer is the next thing to be considered, and this will depend in a great measure upon the use to which it is to be applied. Thus, the hard-working labourer or mechanic, who requires actual support, will not obtain much benefit from any beer made with less than three or four bushels of malt to the hogshead, of which, however, he only requires enough to take with his dinner and supper. But for those who are engaged in haymaking, or any work producing much perspiration without great bodily fatigue, a smaller and weaker beer will do better, as it is required chiefly to quench the thirst, and consequently four quarts of this are better than two of a beer made with double the malt. The late Mr. Cobbett, in his *Cottage Economy*, instituted a most unfair comparison between tea and beer, the former of which he made out to be the root of all evil, and the latter the greatest boon to the labourer; but not only was he mistaken in his conclusions, but he was also wrong in his facts, since it is now established by all chemists, that tea, coffee, and cocoa contain an active principle, even more capable of affording support than the alcoholic stimulus of beer. The test, by keeping a pig on tea alone, proposed by Mr. Cobbett, is simply absurd, since no one dreams of feeding men, or women either upon this beverage alone, but it is in combination with other food that its use is advocated, and from the result of actual trial, gains fresh ground every year. If a man has only plenty of meat and bread, with good wholesome vegetables, he can do exceedingly well without his beer; though I am quite of opinion, that to a hard-working man, a quart, or even three pints of good beer daily, are a great advantage in every respect. Mr. Cobbett recommended the labouring man to brew his beer with three bushels of malt, and three pounds of hops to the hogshead, and this is, I think, about the best general strength, though, in the summer, he will do better with more water and hops in proportion. For table-beer, as used in families, two and a half bushels of malt, and three pounds of hops, will be found to be better liked in these days of bitter beer, and will make a drink quite strong enough for all ordinary purposes. This, however, is more particularly specified in para. 1071, 1072.

1314. **Brewing at Home** is frequently conducted so as to produce two sorts of beer, namely, ale, which keeps some little time, and table-beer, which soon turns sour. It is better, however, I believe to brew all one way, as the small-beer is never properly appreciated, and is often wasted in order to compel the use of the superior beverage. When only one kind is brewed, the process is similar to that described at par. 1061; but supposing a small quantity of two kinds is to be brewed, as eighteen gallons of ale and thirty-six of small-beer, the method of proceeding will be as follows:—The utensils required will be those specified in the estimate No. 2, with an additional eighteen-gallon cask for the ale. The mash-tub has no false bottom, but is prepared as follows: it must be a little broader at top than at bottom, and a little wider than it is deep. In the middle of the bottom a hole, two inches in diameter, is to be cut, and this is to be closed by means of a stick fitted into it, and rising above the level of the tub, the bottom being tapered so as to fit the hole without leakage, and to pass easily through a bunch of fine birch twigs tied at each end, which is to be laid over the hole to act as a strainer or hop-back. A weight is sometimes placed upon these twigs to keep them from rising with the stick; but this may easily be prevented by tying a forked stick to them, and holding it in the left hand, while the right lifts the plugging stick, or stirs the grains, or by nailing it down with tapes. Having now heated the copper full of water you get ready the malt, of which three bushels will suffice; and as this will suck up twelve gallons of water, it is necessary, in order to draw off nineteen gallons of wort for the ale (which quantity will allow for evaporation in boiling subsequently), to put in the mash-tub thirty-one gallons of water at 170 degrees. Then stir in the malt, using for that purpose an ordinary broom-stick, with three or four short pieces of wood nailed across it, with which the malt is to be well mixed with the water, and then it should be covered up with sacks, and left for two hours. At the end of that time the stick corking up the hole in the middle is to be very gently raised, so as to allow the wort to trickle out very slowly; and this is effected by depressing the one stick attached to the bunch of birch, while the plug-stick is raised. In order to keep it exactly at the proper height, it is only necessary to tie the two together with a piece of twine wound round them, as the grains will prevent their falling out of the perpendicular. The wort falls into the underback, and when the nineteen gallons are drawn off, the first of which should not be collected, but returned into the mash-tub, push the stick firmly into the central hole, and mash again with another twenty-eight gallons of water, at 174 degrees. As soon as this is well stirred up, ladle the ale wort into the copper which is now empty, and then put into it a pound and a half of hops, taking care to separate them well with the hand previously. Next, make the copper boil, and keep it gently boiling for an hour, or rather more, or until the wort is well broken up (see par. 1062); then damp the fire and draw off the wort into the coolers, straining off the hops as it passes into them. By the time that the copper is filled with water, and the latter is hot enough, you may draw off the first mashing of the small-beer into the under-back; and as it runs out pour in more water, at 175 degrees, to the extent of about nineteen or twenty gallons, after which no more water will be wanted, and the copper may be prepared for boiling the two mashes of small-beer, which, as it holds forty gallons, it will readily do. The first small-beer mash may now be ladled into the copper and the fire started again, adding at the same time half the quantity of hops for this brewing, or a pound and a half; then, when the next mash is drawn off, which it may be at the end of an hour from the first letting the water in, add the other moiety of the hops, and boil the whole thirty-eight gallons for at least two hours, by which time they will not make more than thirty-six, the quantity wanted. While this is going on, the mash-tub and under-back are being taken down to the cellar to be used as fermenting tuns, the former for the small-beer, thirty-six gallons, and the underback as a subsidiary one for the ale, which must now be carried down in buckets to fill it, supposing it cool enough, which it ought to be. When this is done, strain the small-beer wort from the copper into the coolers, now emptied of the ale wort, and when it is cool enough, remove it down into the former mash-tub, now converted into a fermenting tun. In this way, by a little management, with very limited and apparently inefficient utensils, a brewing of eighteen gallons of ale and thirty-six gallons of small-beer may be carried out with just as good a chance of success as if the apparatus cost £20; the only thing requiring care being the cooling, which should, if possible, be managed in an open shed, so as to ensure a quick lowering of the temperature. Unless, therefore, there is such a convenience, aided also, if possible, by a gutta-percha pipe and stream of cold water (see par. 1055), it will be in vain to attempt the brewing of this beer when the temperature of the outer air is above 50 degrees. But when the brewing is intended to be all of one kind of beer, though it would be better if possible to keep the first and last mashes separate, the utensils are not sufficient for the purpose, and they must therefore be mixed together. The three mashes may then be conducted exactly as before; but when in the cellar they may be put together as nearly as the brewer can manage it. The fermentation is to be conducted exactly as is described at par. 1064, and it will generally be found that in about ten days or a fortnight the small-beer will be fit to drink, while the ale will require three months' time to make it fine. The latter will not be very strong, but the small-beer will be certainly worthy of its name, and pleasant while fresh.

1315. The cost of these qualities of ale and beer are as follows:—

COST OF EIGHTEEN GALLONS OF ALE AND THIRTY-SIX OF SMALL-BEER.

	£	s.	d.
3 bushels of malt	1	5	6
4½ lb. of hops	0	4	6
Yeast, firing, and labour paid for by the grains.			
	£1	10	0

The grains are always considered to pay for the brewer, the firing, and the yeast. This ale, if purchased, would cost about 1s. 3d. per gallon, and the small-beer about 6d.; the two together, we will say, coming to £2 0s. 6d., so that there would be a clear saving of 10s. 6d. on this quantity. If, however, we calculate to brew 54 gallons of beer from the above quantity, the value of the whole would be, at 9d. per gallon, exactly the same; and indeed there would then be a saving of nearly 2½d. per gallon, the home-brewed beer costing 6½d. and a fraction over.

1316. BEER made with a mixture of malt and sugar will vary in cost according to the relative price of the two articles. The malt should be mashed as usual, and all the power of the whole quantity of water exerted upon it by the ordinary number of washings, then add the sugar, and boil with the hops.

1317. RELATIVE COST OF SUGAR AND MALT.—It is found by experiment, that twelve pounds of raw sugar, of good quality are equal to a bushel of malt in saccharine matter; and, therefore, when they can be procured for less money a saving to that extent is effected. Thus, supposing, instead of the last proportions, the following are substituted:—

	£	s.	d.
Two bushels of malt	0	17	0
12 lb. of sugar, at 4½d.	0	4	6
4½ lb of hops	0	4	6
Yeast, labour, and firing as before.			
	£1	6	0

It will appear that there is a saving of 4s. on the whole quantity, or about ¾d. per gallon. In point of economy, therefore, it cannot be denied that sugar is advantageous; but the beer produced in this way is certainly not equal in flavour to that from malt and hops alone.

1318. BEER is sometimes made with sugar *alone*, and for this kind of brewing very few utensils are required, there being no mashing to be done. The hops are to be boiled in the water for ten minutes, or from that to a quarter of an hour, then add the sugar, and just barely boil up and strain. Put the whole liquor, as soon as it is cooled to about 55 degrees, into a barrel with the yeast, and keep it full by adding a little sound *malt* ale, as the yeast passes over. When the wort has fermented to such an extent as to have nearly, but not quite, lost its sweetness, close the bunghole, and in three or four days it will be fit to drink. The quantities and cost are as under:—

QUANTITIES AND COST OF SUGAR BEER.

	s.	d.
12 lb. of raw sugar	4	6
Yeast, 1½ pints	0	4
Firing	0	8
Water, 18 gallons.		
	5	6

This sugar beer, therefore, will cost not quite 3¾d. per gallon; but though it is said to be equal in strength to beer made with three bushels of malt to the hogshead, and to be quite as palatable, I cannot say that in either respect my experience bears out the assertion. It is perfectly wholesome, I believe, if properly fermented, but it has not the peculiarly refreshing taste of malt and hops, and may, in my opinion, be classed with the "cheap and nasties." TREACLE BEER is made in the same way, with one quarter more of the treacle than is given above of sugar.

1319. SPRUCE BEER is made either *white* or *brown*; the former being prepared with loaf sugar, and the latter with treacle or molasses, as this is sometimes called. The receipt is as follows, and also the cost:—

	s.	d.
Treacle, 12 lb.	3	0
Essence of spruce, 8 oz. ...	6	0
Yeast, one pint	0	2
Boiling water, 18 gallons.		
	9	2

Dissolve the treacle in the water, then add the spruce, and when cool pour into it the yeast. When well stirred, it is to be poured into an eighteen-gallon cask, and treated in a similar way to the sugar beer in the last paragraph. For white spruce beer ten pounds of coarse white sugar will suffice for the above quantity of water and essence of spruce. The cost is, as nearly as may be, 6d. per gallon; and it is, for many people, a very palatable and wholesome beverage, acting slightly on the kidneys.

1320. THE PROPER MANAGEMENT OF THE VENT-PEG is always of great importance in the draught of malt liquors, the object being to avoid the entrance of much air to the vacant space above the liquor in the barrel. Unless some is admitted the tap will not flow, and therefore this provision must be made. The common vent-peg is perfectly efficient, if it is closed immediately after each draught, and only slightly lifted when more is required, or in fact only when the liquor from the tap ceases to flow freely. Taps are sometimes made with a double tube, so as to admit air, while they allow the fluid to run out; but in practice they do not answer. Many years ago a spring vent-peg was brought out which opened like the key of a flute, and closed itself immediately the hand was withdrawn. It answered most perfectly; but, somehow or other, it did not get into general use, and I have not seen one for at least twenty years. Nothing more is required than a small metal tube with a hole through it, closed by a flat key, which works on a side-arm, and is pressed down just like a flute key. They were sold at a low price, and might now be made for less than sixpence a-piece, to the great advantage of all draught-liquors. A sketch of this vent-peg is shown at *fig.* 103.

1321. HOME-BREWED MALT LIQUORS of all kinds, except small-beer, may be bottled when properly fined; and after this stage is thoroughly finished, the sooner the bottles are filled the better; whereas the ordinary plan is to leave the beer in the cask until half converted into vinegar. If the beer is fresh, it requires no addition; but if at all flat or sour, a lump or two of white sugar should be dropped into each bottle, which should then at once be corked, tied down, and stored in the cellar standing up, and only turned down on its side about a week before it is wanted for use. Beer of good quality, well hopped, and not at all acid, will keep for years in this way. The best ales have been bottled for twenty or thirty years without losing all their sweetness. (See par. 1074.)

1322. WHEN BEER, MORE OR LESS SOUR, is to be drunk, about four or five grains of bicarbonate of soda put into each tumbler and *beat up*, not stirred, with a spoon, will correct the acidity, and give it somewhat the flavour of bottled-beer.

SUB-SECT. B.—CIDER, AND HOME-MADE WINES.

1323. CIDER is always made *at home*, when the apples are grown on the premises, and seldom in any other case, as it does not often pay to purchase the apples in order to convert them into cider. The two methods of making cider have been already given at page 326, and it is therefore unnecessary to allude to them here again.

1324. SWEET WINES, OR BRITISH WINES

as they are sometimes called, are almost always compounded of some kind of fruit and *water*, and therefore differ from the foreign wines, which are, or ought to be, the genuine juice of the grape. In consequence of the large proportion of malic acid existing in all our native fruits, sugar must be added to the wine, and in some cases brandy also, in order to prevent the tendency which that acid has to conversion into acetic and carbonic acids on the addition of a ferment. The great difficulty, therefore, is to avoid the Sylla of excessive sweetness, without falling into the Charybdis of vinegar; but, in making the attempt, it is too often the case that the voyager encounters them both. In some cases, as in malt, cowslip, and ginger wine, the fermentation is properly carried out; and, from the absence of malic acid, they are as sound and as wholesome as any wines can be; but in the rhubarb, gooseberry, and currant wines, so much prized by our grandmothers, it abounds, and the consequence is that sugar must be largely added, with a result that is not pleasant to the male sex, although it may suit the palates of the feminine part of creation. Whenever these wines are intended to be effervescent, they must be bottled before the fermentation has entirely ceased.

1325. To Fine Wine.—Let two ounces of isinglass be dissolved in a very little of the wine to be fined, and put it near the fire for a day or two. Beat the whites of four eggs to a froth, take out a gallon of the wine, mix all well together, and put it into the barrel; beat it well with a strong whisk of the arm for nearly an hour in the barrel; let it stand one day, and the next stop it up. In three weeks or a month it will be fine. The above is for twenty-five gallons of wine or rather less.

1326. To Take the Tartness off Cider, Perry, or Wine.—Take oyster shells, burn and grind them to a fine powder; put three pounds to every half hogshead. This will take off the sharpness in a very short time.

1327. The Following Receipts will be found to produce as good wines of their respective kinds as can be effected from such materials:—

(*a*) Malt Wine.—Take of pale malt, ground, one bushel, and boiling water twelve gallons; infuse or mash as for beer, and strain off the wort; then add forty pounds of loaf sugar and ten pounds of sugar-candy, dissolved in thirty-two gallons of hot water; when cooled down to 55 degrees, add one quart of yeast, and put it into a fifty-four gallon cask, to which add, on the third day, twenty pounds of raisins, stoned. Let it work for three days, then pour in half a gallon of brandy (British will do), and bung it down, taking care to fill the cask up with warm but not boiling water, if necessary. In four months rack it off into another cask and add another half gallon of brandy. In a month it will be fit to drink from the wood, and in two more to bottle for keeping.

Another Malt Wine (inexpensive).—To every gallon of water put three pounds of brown sugar, boil and skim it well, when the liquor is nearly cold, put two ounces of yeast to it, and let it stand till the following day, then put it into a perfectly clean cask, with one pint of strong new ale in a state of fermentation, and one pound of raisins to every gallon. Let it stand twelve months before bottling it.

(*b*) British Madeira Wine.—To one gallon of water add three pounds of moist sugar, boil and skim it for three quarters of an hour; when cool put to each gallon one pint of ale from the vat when working, and a tablespoonful of yeast; when it shows a white head put it into a cask, and when it has done working put to each gallon one pound of raisins, and then stop it up. It ought to remain in the cask twelve months before it is bottled. In making a considerable quantity of this wine two or three pounds of sugar may be saved. About a pint of brandy to ten gallons of wine will be an improvement.

(*c*) Ginger Wine.—Take one gallon of water, three pounds of loaf sugar, one lemon, one orange, one ounce of ginger, and a quarter of a pound of raisins. Boil the sugar and water a quarter of an hour, then take a little of it to boil with the ginger and peel of the lemons and oranges for one hour. When nearly cold mix the two together, and put in the juice of the oranges and lemons with one ounce of isinglass, and a tablespoonful of yeast. Lastly, after twenty-four hours, pour the whole into a small cask, let it remain six weeks, then rack carefully; let it remain another month, and bottle. (*This is an excellent receipt.*)

Another.—Take thirty quarts of water, twenty-seven pounds of sugar, sixteen lemons, two Seville oranges, six ounces of ginger, two pounds of raisins, and half a pint of brandy. The raisins, lemon juice, brandy, and a teacupful of good yeast to be put into the barrel, the rest boiled half an hour and put into the barrel when not more than new milk warm. Stir every morning for ten days; bottle in three months.

(*d*) To Make Cowslip Wine.—To one gallon of water put three pounds of loaf sugar; boil these together for three-quarters of an hour, let the liquor stand till it is cold, then dip a toast in yeast, place it in and let the whole work three or four days. Put it in the cask, and add one gallon of cowslip-pips (measured when freshly gathered), and the juice of an orange and lemon; stir it up well with a stick every day for nine days, then stop it up; in ten days bottle.

(*e*) **To Make Orange Wine.**—To ten gallons of water, put three pounds of loaf sugar, and the whites of ten eggs; boil as long as any scum arises; then pour into a tub. When nearly cold, add the juice of one hundred Seville oranges, half their peel, finely pared, and half a pint of ale yeast; let it ferment twenty-four hours, then put it in the cask with half a pint of brandy. Tun the wine when it has done working, stop it down close for three months, then rack it off; put it into the cask with half a pint more of brandy, and one or two pounds of raw sugar. Let it stand twelve months before it is bottled.

(*f*) **To Make Raisin Wine.**—Put into a tub as many gallons of water as the cask for the wine will hold. The water may be cold, if *soft*, or if hard it must be boiled, and then cooled. To each gallon add seven or eight pounds of raisins (half Malaga and half Smyrna). Let it ferment in the tub five or six weeks, stirring it once a day till the evening before it is drawn off to be put in the barrel. When to be drawn off, instead of pressing the fruit in a mill, put on some large and heavy weights, and let it drain for a day or two, and add the liquor to that in the cask. Should this not be sufficient to fill it up, a small quantity of fresh water may be thrown over the fruit, and in a day or two drawn off, and applied for that purpose. When it has been in the cask a month or six weeks, rack it, and add to it some French brandy, in the proportion of *at least* two bottles to a hogshead. Then let it remain unstopped, with a perforated tin only placed over the bunghole for a year *at least*, when it will be fit to bottle; and when that is done it will be best for safety to let the bottles stand upright. The fruit should not be picked, but put into the tub altogether as it comes from the grocer.

(*g*) **To Make Black and Red Currant Wine.**—To every quart of water add two pounds of currants and half a pound of loaf sugar; break the currants in the water, and then strain the liquor before the sugar is added; it will be fit to put in the cask in twenty-four hours after it is made.

Another.—Add ten pounds of currants to a gallon of water, squeeze them, and let the liquor stand two days in a tub, stirring it occasionally, then press the currants and strain them through a sieve; to every gallon of liquor put four and a quarter pounds of lump sugar; let it stand in the tub two days more; take off the scum and tun it; leave the bung loose a month or two, then stop it close; let it stand three or four months, then try it, and if too sweet stop it up again till the sweetness has gone off, opening the bung to taste it. Put in what raspberries you like, and if they are ready before the currants, put them in brandy and sugar.

(*h*) **Damson Wine.**—Gather the damsons on a dry day, weigh and bruise them; to every eight pounds of damsons put a gallon of water (first boiled and skimmed); put it boiling on the fruit, and when it has stood two days pour off the liquor and put it into the barrel, with three pounds of moist sugar to each gallon; fill the barrel, and stop it close; when bottled put a lump of sugar and a little brandy into every bottle.

(*i*) **Elder Wine.**—If two gallons of wine are to be made, get one gallon of elderberries and a quart of damsons or sloes; boil them together in six quarts of water for half an hour, breaking the fruit with a stick flat at one end; let the liquor run off, and squeeze the pulp through a sieve or cloth; boil the liquor up again, with six pounds of coarse sugar, two ounces of ginger, two ounces of allspice bruised, and one ounce of hops, the spice to be tied loosely in a small piece of muslin; let this boil more than half an hour, then pour it off; when quite cool stir in a tea-spoonful of yeast, and cover it up to work; after two days skim off the yeast, and put the wine into a barrel. When fermentation ceases, which will be in about a fortnight, paste a stiff brown paper over the bunghole; after that it will be fit for use in about eight weeks, but it will keep for years. The bag of spice may be dropped in at the bunghole, having a string fastened from it to the outside, which will keep it from reaching the bottom of the barrel.

Another.—Procure elderberries when quite ripe; bake them in an oven with the bread, then strain the juice from them; to six gallons of water put three pounds of moist sugar; boil it one hour, and skim it; when it is cool put one quart of juice to every gallon of liquor; spread a toast thickly with yeast, put it in, and let it stand for a week; then put the wine in the cask; to every gallon add one pound of raisins; a pint of brandy to every three gallons of wine will be an improvement.

(*j*) **White Elder Wine.**—To a quart of white berries add a quart of water, boil it, pass it through a sieve, but do not press the berries; to each gallon of this liquor put three pounds of lump sugar; let it boil, skim it, and when milkwarm work it with a barm-toast for five days; stir it two or three times a day; to about five gallons of the liquor put three pounds of Malaga raisins, chopped; before the wine is put into the vessel wash it with brandy; stop it up when it has done working; to each gallon put the rind and juice of a lemon. Lisbon sugar will make it as good as the lump.

(*k*) ELDERFLOWER WINE.—To every gallon of water put four pounds of sugar, half a pint of elderflowers *not* pressed down, and one table-spoonful of yeast. Mix these altogether and put them in a barrel, stir it *every* morning for a week, then stop it up close; it will be ready to bottle in six weeks. (*A delicious wine.*)

(*l*) TO MAKE ELDER WINE WITH CIDER.—To every gallon of cider run clear from the mill put two pounds of brown sugar, one pound of Malaga raisins, and one quart of elderberry juice; put it into a tub, and stir it once or twice a day; when the sugar is dissolved put it into a barrel, and when it has done working put to every gallon one pennyworth of sweet orrice-root, cut small; do not stop the bung till March; it may be bottled in the same year, but it is better to wait till the March or April following. The juice may be prepared and kept till the cider is ready; but it must be mixed with part of the sugar.

(*m*) BLACKBERRY WINE. — Gather the blackberries when they are full ripe and dry. Take twelve quarts and crush them with the hand; then boil six gallons of water with twelve pounds of brown sugar for a quarter of an hour, skim it well, and pour it on the blackberries, letting it stand all night; then strain it through a hair sieve, and put it into a cask, with six pounds of Malaga raisins and one ounce of isinglass dissolved in a little cider. Stir all up together, and then stop up close, letting it stand six months before bottling.

(*n*) GOOSEBERRY WINE.—Take ripe gooseberries, beat them in a mortar, and put into a tub one quart to each quart of water; let them stand all night, then strain through a hair sieve, and press them with the hand. To every gallon put three pounds of moist sugar. Let it stand two days, and then put it into a cask with one pound of Malaga raisins to each gallon of liquor; add a little brandy, and let it remain in the barrel three or four months, or till fine; then bottle it.

Another Receipt.—To thirty-six pounds of very ripe fruit add three gallons of boiling water, let them stand twenty-four hours; strain them off; add twelve pounds of good moist sugar, stir and skim for twenty-four hours more, then put into the cask to ferment. It will be ready to bottle in four months.

(*o*) GREEN GOOSEBERRY WINE.—To six pounds of unripe gooseberries, well picked and mashed, add one gallon of water. Let it stand several days, stirring it twice a day; then to every gallon of liquor add three-quarters of a pound of loaf sugar. When it has done fermenting put a quart of brandy to every five gallons, with a good ounce of isinglass steeped in it. Stop it down, and in six months bottle it.

(*p*) GOOSEBERRY CHAMPAGNE.—Gather the amber gooseberries *when just turning*, and pour cold water over them in the proportion of three quarts of water to one gallon of fruit; let the preparation stand a week, stirring it every day, and bruising the gooseberries till quite mashed; then strain through a sieve, and add to every gallon of liquor four pounds of moist sugar, let the fermentation proceed for two or three days, then pass through a flannel bag into the cask, leaving it open till the fermentation subsides; add to every five gallons of wine half an ounce of isinglass dissolved in a little of the same, and close the cask. If the champagne is required to be potent, add, before closing the cask, a bottle or two of brandy; but the wine will be brisk and agreeable without. It should remain twelve months in the cask before bottling.

(*q*) RHUBARB WINE.—Take five pounds of rhubarb, cut as for tarts; add one gallon of cold water, and put it into a tub for eight or nine days, stirring it well two or three times each day. Strain, and to every gallon add four pounds of loaf sugar, the juice and part of the rind of a lemon; put it in a cask with at least half an ounce of isinglass dissolved in a little of the liquor; a little brandy may be added. Stop down the cask for a month, and bottle in ten or twelve months more.

(*r*) TO MAKE PARSNIP WINE.—Let the parsnips be well cleaned, slice them, and to every gallon of water put three pounds of parsnips and three pounds of good moist sugar, boil them to a pulp, strain off the water, and well wash the pulp with part of it; skim it well while boiling; when boiled put it in a tub, and when sufficiently cold put it into the cask with a table-spoonful of yeast, and after it has fermented properly add what quantity of spirit you please, and stop it up.

(*s*) BRITISH GRAPE WINE.—Pick the grapes from the stalks, and squeeze the juice away, then grind and press the pulp in a cider-mill; to every gallon of liquor add two pounds and a half of sugar if the fruit is ripe, otherwise three pounds; let it stand in a tub two or three days, stirring it several times each day; rinse the cask with brandy, and put it in; it must be stopped up (according to the degree of fermentation which has taken place) in about three weeks or a month, having a vent-peg in the cask; it is best racked in a few months and brandy added, about a bottle to twelve gallons, with an ounce of isinglass to about ten gallons; let it remain in the cask not less than a year, nor more than a year and a half; the riper the grapes the better, provided they are secured from insects.

(*t*) **Birch-tree Wine.**—In the beginning of March, when the sap is rising, bore holes in the trunk of the tree, introduce tubes of elder, and the sap will flow out. Boil the sap with four pounds of sugar to each gallon, and ferment it like other wines.

(*u*) **Dandelion Wine.**—On two quarts of dandelion flowers pour one quart of boiling water, and let it stand all night; the next morning strain it, and add three pounds of sugar and one lemon; then boil for half an hour. When cool put it in the cask with a little yeast spread on a toast. It will be fit to bottle in two months.

(*v*) **Sparkling Mead.**—Boil fourteen pounds of honey in six gallons of water for half an hour, breaking into it three or four eggs; then add small bunches of marjoram, balm, and sweetbrier, half an ounce each of cinnamon, cloves, mace, and bruised ginger, and boil a quarter of an hour longer; pour it out to cool, then toast a very large slice of brown bread, spread it over with fresh yeast, and put it into the liquor; let it ferment for a day, then put in the cask, but keep it open till the fermentation is complete. Some add a bottle of Moselle or Hermitage before they close the barrel. It may be bottled in a month, and the corks must be securely tied.

(*w*) **Mead.**—To every gallon of water put four pounds of honey, and boil it three-quarters of an hour, taking care to skim it. To every gallon add an ounce of hops, then boil it half an hour, and let it stand till next day, when put it into the cask, and to thirteen gallons of the liquor add a quart of brandy. Let it be lightly stopped till the fermentation is over, and then stop it very close. If you make a large cask, keep it a year before bottling, and for a smaller cask in proportion.

(*x*) **Cowslip Mead.**—Put thirty pounds of honey into fifteen gallons of water, and boil till one gallon is wasted; skim it, take it off the fire, and have ready a dozen and a half of lemons quartered; pour a gallon of the liquor boiling hot upon them, put the remainder of the liquor into a tub, with seven pecks of cowslip-pips; let them remain there all night, and then put to the liquor and the lemons eight spoonfuls of new yeast, and a handful of sweetbrier; stir all well together, and let it work three or four days. Strain it, and put into the cask; let it stand six months, and then bottle it for keeping.

Sub-sect. C.—Liqueurs, Punches, &c.

1828. **Liqueurs** are compounds of alcohol with some flavouring material, of which the following receipts give many varieties. They are most of them, as now made, very sweet, and somewhat cloying; but, in small quantities, not unwholesome.

(*a*) **Curaçoa.**—Take one pint of brandy, and pare into it the rind of six Seville oranges as thin as possible; let this stand for three days, stirring it very often, then add the juice of the oranges, and two quarts of brandy, five pounds of loaf sugar bruised, and one pound of sugar-candy powdered; stir it well for half an hour, and let it remain two days longer, stirring it during the time; then strain and bottle it. It should not be opened for six months, and the longer it is kept the better.

(*b*) **Ginger Cordial, as a Liqueur.**—Take one pound of raisins, the rind of one lemon, and three-quarters of an ounce of bruised ginger. Steep these ingredients in a quart of best whisky or brandy, then strain it, and add one pound of powdered loaf sugar to every quart of juice.

(*c*) **Maraschino.**—Take the rinds of twelve Seville oranges and five lemons, peeled very thin, and three pounds of sugar-candy; steep the whole in one gallon of gin four days and nights. Stir it frequently, and run it through filtering paper to clear it.

Another.—To a bottle of English gin add two ounces of bitter almonds, blanched and bruised, and six ounces of white sugar-candy. Mix, and let it stand a fortnight. Strain it, and it will be ready for use in another fortnight.

(*d*) **To Make Noyeau.**—Blanch and pound two pounds of bitter almonds, and put them into a gallon of white brandy, with two pounds of white sugar-candy, a nutmeg grated, and half an ounce of mace. Stir it about well every day for twelve days, then leave it for six weeks, when it may be bottled, but must be kept some months before it is ready for use.

(*e*) **Creme de Noyeau.**—Take two quarts of spring water with two pounds of loaf sugar boiled in it, and put it into a gallon of either brandy or rum. Add three half-pints of boiled milk to it, and the peel of five lemons. Blanch and bruise half a pound of bitter almonds, and put them in. Let the ingredients stand together five days, stirring well each day. Filter it through a sheet of cap-paper, and bottle it. It may be drunk in a month, but improves by keeping.

(*f*) **Ratafia.**—Blanch two ounces of peach and apricot kernels, bruise, and put them into a bottle, and fill nearly up with brandy. Dissolve half a pound of white sugar-candy in a cup of cold water, and add it to the brandy after it has stood a month on the kernels, and they are strained off; then filter through paper and bottle for use. The leaves of peaches and nectarines, when the trees are cut in the spring, being distilled, are an excellent substitute for ratafia in puddings.

(*g*) To Make Rum or Brandy Shrub.—Strain the juice of twelve Seville oranges and the same quantity of lemons; pour it upon the peel of half the quantity of fruit, and add one pound of loaf sugar. When the sugar is dissolved by stirring, add a gallon of rum or brandy. Put all except the peel into a cask, and shake it every day for a week, then let it stand till fine, and bottle it.

(*h*) To Make Currant Brandy or Shrub. Take one gallon of brandy, three pints of white currant juice, three pounds of loaf-sugar, and the peel of three large lemons; then take a quarter of a pound of bitter almonds, blanched and bruised, and put them into one quart of spring water, letting it stand some hours. Add it to the other ingredients, and let all stand for three days, stirring often. Strain through a jelly-bag, and bottle when clear.

(*i*) Orange Brandy.—Take the rinds of three lemons and eight Seville oranges, peeled very thin, and three pounds of fine loaf-sugar pounded, or sugar-candy. Steep the whole in one gallon of brandy for four days and nights, stirring it frequently, and run it through filtering-paper to clear it.

(*j*) To Make Raspberry Brandy.—To one gallon of brandy put two quarts of raspberries; bruise them in a little of the brandy; let them steep ten or twelve days; cover them up close, then strain through a sieve; put to the liquor three-quarters of a pound of sugar; when it is fine bottle it.

(*k*) To Make Punch.—To four quarts of boiling water put one pint of brandy and one pint of rum, the peel of two lemons, with the juice, and sugar according to taste.

(*l*) Milk Punch.—Take one quart of lemon-juice, four or five quarts of rum, four quarts of water, two quarts of milk, and three pounds of loaf sugar. Pare the lemons, then mix the juice, rum, and water, and dissolve the sugar in them; after which pour in the milk boiling hot, and put in the peel of four lemons. In a few minutes taste it, and if it is not to your taste make it so, by adding more of any ingredient apparently deficient. Run it through a bag, and bottle it. It is fit for use immediately, or it may be reserved for future consumption.

(*m*) Essence of Punch is made of one bottle of rum, and two bottles of brandy, the peel and juice of three Seville oranges and six lemons, and three pints of strong green tea, with one pound of sugar.

(*n*) To Mull Port.—Put half a pint of water into a clean saucepan, with three ounces of sugar and a little nutmeg and cloves; boil all together for a few minutes; then add from six to twelve glasses of rich port wine; do not allow it do more than boil for a moment, and pour out into a jug ready for use.

(*o*) To Mull Claret.—Boil gently the sugar and spice in just enough wine for the purpose; then add the remainder, and boil as above for a second or two. Serve in silver.

(*p*) To Make White Wine Whey.—Boil a pint and a half of skimmed milk, add two glasses of raisin or sherry wine, fifteen grains of purified nitre, and lemon-juice enough to turn the milk; boil it up, and then set it aside until the curd subsides; strain it, and add enough sugar to make it pleasant; one half to be taken on getting into bed, the other ten minutes afterwards.

(*q*) Badminton.—Peel half of a middle-sized cucumber, and put it into a silver cup with four ounces of powdered sugar, a little nutmeg, and a bottle of claret. When the sugar is thoroughly dissolved, pour in a bottle of soda-water, and it is fit for use.

(*r*) Cider Cup.—Make a square toast less than the size of the cup, grate upon this some ginger and a little nutmeg. Put in the cup with the toast two or three ounces of sugar, according to the palate, and a glass or two of sherry, then fill up with cider, and serve.

(*s*) Cool Tankard, or Ale Cup, is made in the same way as (*r*), using ale instead of cider.

Another Cold Cup.—One gill of white wine, one gill of fresh beer, one pint of good sweet cider, two slices of lemon, one sprig of balm, a little nutmeg, and sugar to taste.

(*t*) Egged Wine.—For each half-pint of egged wine intended to be made, take two eggs, beat them up thoroughly in a small basin with an ounce and a half of white sugar (fine moist will do), and a little powdered nutmeg and cloves. While doing this, heat half a pint of sherry and water, in equal quantities, or stronger of the sherry if desired; and when boiling hot stir it into the eggs, after which pour the whole backwards and forwards, from the saucepan into the basin, and *vice versa*, until it thickens. If this, from the coldness of the atmosphere, does not take place, it must be put on the fire again, and constantly stirred till it does, which never fails in a few minutes.

(*u*) **EGG FLIP.**—This is made in the same way as egged wine (*t*), substituting good ale for the sherry and water, and occasionally adding a little brandy, if the ale is not strong enough.

SUB-SECT. D.—VINEGARS AND PICKLES.

1329. **THE METHODS USED IN MAKING VINEGAR** have been described at page 308, where there are two or three receipts given, which may be used in the home-manufacture of the article. White-wine vinegar *may* be made, if desired, using the newest samples of *unbrandied* wines which can be purchased, and treating them exactly as described in par. 994. This, however, will cost rather more than the wine itself from the loss in evaporation, &c., and therefore few people will consider it worth their while to make the attempt, especially as genuine imported white-wine vinegar may be purchased by going to respectable houses at a much less cost. At par. 995, a receipt is given for sugar-vinegar, which provides this article at a cost less than the retail price, and of a very superior quality. According to that method, vinegar costs about 6d. to 8d. per gallon, and the quality is quite equal to that retailed at 2s. or even at 2s. 9d. Malt-vinegar, well made, is superior in flavour to sugar-vinegar; but it takes a longer time to acetify, and also costs more in labour and money. By the use of a barrel, set on end, instead of on its side, and with a small frame worked through the head of the barrel by a rod, and supporting a few bundles of birch steeped in water and well cleaned, the quick principle used by Messrs. Hill and Co. may be readily adopted in private houses without any increase of cost. It is only necessary to obtain a barrel large enough to hold rather more than double the quantity of vinegar to be made, then take out the head, and cut a hole in its centre to admit a mop-stick to work up and down freely. Next, make a circular open frame, rather smaller than the cask, and attach the mop-stick to its centre; tie the birch loosely upon this, and then pass the mop-stick through the hole in the head of the cask, and let the cooper head it in as usual. Make a hole in the mop-stick to receive a peg when pulled up, so that it will not fall down again, and the apparatus is complete, beginning with the birch frame, &c., at the bottom of the cask. Put it in a place where it will be kept at an uniform temperature of about 80 degrees, and then introduce the wort through the bunghole, which is to be left open, or only partially closed. When the wort is in, lift the mop-stick with its frame, and keep it up by pushing the peg into its place. In a short time the wort will all run down again, and then the peg must be taken out, the stick pushed down to the bottom and raised again, putting in the peg to keep it there. By repeating this once after every meal, or at any other fixed period, the process is considerably accelerated, and the vinegar *is made of a better quality also*, being quite equal to that retailed at 2s. 9d. a gallon. The principle of this method will be more readily understood by referring to par. 997, and its illustration (*fig* 84). The cost of this malt-vinegar by either the slow or the quick process, allowing nothing for trouble and firing, &c. (which, as in the case of beer, will be paid for by the grains), is, at the rate of a bushel of malt to 18 gallons of vinegar, as near as may be 6d. a gallon. This proportion, however, does not make it quite strong enough to be worth the price quoted above, but sufficient for most domestic purposes; but supposing a bushel and a half to be used, that only brings the price up to 9d. a gallon; and when beer is brewed at home nothing is more easy than to set apart a portion of the wort to be converted into vinegar by either of these methods.

1330. **FLAVOURED VINEGARS**, that is, vinegar made with the addition of raspberries, cowslips, gooseberries, &c., are sometimes used as pleasant summer-beverages. In each case the additional sugar is in great measure converted into vinegar, while the fruits contribute in some cases a proportion of it, but chiefly their peculiar flavour. The following are good receipts:—

(*a*) **RASPBERRY VINEGAR.**—Take a quart of fruit and bruise it, to which put one quart of white-wine vinegar; let it stand three days; strain it off, and add three pounds and a half of loaf sugar; simmer it well together; when cold bottle it for use; instead of corking, tie paper or leather, with pin holes in it, over the mouths of the bottles.

(*b*) **COWSLIP OR PRIMROSE VINEGAR.**—Take nine gallons of water, twelve pounds of coarse sugar, half a peck of cowslips, stalks and all, and one pint of pips; pour the boiling hot sugar and water upon the cowslips; when nearly cool put three spoonfuls of yeast on a toast to make it ferment; stir it well morning and evening; on the fifth day remove the toast and a good deal of what settles at the top of the vessel (either earthenware or wooden) in which they have been put; then cask it, and treat as for sugar-vinegar, par. 995; bottle off in a year, leaving about a quart of the old stock in the cask for the next batch. Primroses are equally good.

(*c*) **TO MAKE GOOSEBERRY VINEGAR.**—To one quart of gooseberries, quite ripe and well bruised, put three quarts of cold water, let it stand twenty-four hours, then strain it off. Add one pound and a quarter of coarse sugar to every gallon of liquor, then let it stand twenty-four hours, stirring it once or twice during that time. Strain it off and put it into the cask, and treat it for vinegar by keeping it in a warm place, but not in the sun. Burn a rag to put over the bunghole, or cover this with pricked paper, and in twelve months it will be fit for use.

1331. Vinegars for the Purposes of Cookery are made and kept with the object of flavouring hashes, and other made dishes. They are chiefly as follows:—

(*a*) Chili and Capsicum Vinegar are each made by infusing one ounce of chillies or capsicums in a pint of vinegar for a fortnight, and straining when it is ready for use.

(*b*) Horseradish Vinegar requires three ounces of horseradish, scraped, and infused as in (*a*).

(*c*) Compound Horseradish Vinegar is made with the addition to the above of one ounce of minced shallots and a teaspoonful each of black pepper and Cayenne.

(*d*) Shallot, Onion, or Garlic Vinegar may be made in the same proportion as in (*a*).

(*e*) Camp Vinegar.—Take of garlic two ounces, Cayenne pepper one ounce, walnut ketchup one ounce, Gorgona anchovies, chopped, eight, cochineal one scruple, and vinegar one pint; infuse two months, and strain.

Sect. 9.—Unfermented Beverages.

1332. General Remarks.—It is the fashion of the present day, among certain classes, to cry up this kind of beverage as much as it was formerly denounced. It is the same with almost every abuse; for a certain time it holds its way unchecked, and then comes a high tide which carries all before it, and goes a little further than is desirable; often over-leaping the bounds of discretion, and doing injury by running into the opposite extreme. Thus, our ancestors would not let their friends please themselves, but thought it incumbent upon everybody to force his guests to commit excesses, under the threat of salt and water on a refusal. This was bad enough, but I am not sure that it is worse than to make a man take a solemn pledge, knowing full well that he will not keep it. Temperance is a great virtue where there exists temptation, that is to say, where the palate is accustomed to the use of fermented liquors in excess; but when this is not the case, and they are not even relished, there can be no virtue in abstaining from what is disliked. But let not the present crusade against alcohol, in all its forms, stop short in its career without attacking tobacco and opium, which I verily believe do more harm, physically, though not perhaps morally, than alcoholic drinks. Tea, coffee, spirituous liquors, tobacco, and opium, may, and are, all taken to excess; and the person guilty of the practice is intemperate in one case as much as the other. It is the general habit of *self-denial* which ought to be inculcated, and especially in children, not the particular abstinence from gin or beer. The habitual drunkard drinks very often solely to drown care, or to stimulate his exhausted frame, or sometimes from mere idleness; and it is not the mere depriving him of his one kind of stimulus which makes him virtuous, but the raising his moral tone to such a pitch that he does not require any, or, if he feels the desire, enables him to fight against and conquer it. As far as the effects upon society go, I believe the substitution of an excess with coffee and tobacco is an advantage, because they do not lead to a temporary loss of mental control; but to the individual himself the effect is just as bad, and the nervous system especially is as surely, though perhaps more gradually, undermined. Hence it is necessary, that all the following beverages should be taken with a full knowledge that they are wholesome only in moderate quantities; and that it is not because they are approved of by the advocates of temperance that a man, or a woman either, may indulge in them to excess. I do not believe that as yet the wave has rolled far enough to do mischief, on the whole; but in individual cases I have known the practice carried too far, the victim all the while hugging himself with the idea that he was virtuous overmuch. But besides the stimulating effect of some of them, tea, coffee, soda-water, lemonade, ginger-beer, and even water itself, may be taken in such large quantities as to weaken the stomach and produce indigestion; and this is particularly the case with tea as taken by women, and soda-water and ginger-beer as patronized by men. I fully believe that all those beverages enumerated in this chapter are wholesome when taken in moderation, and may be indulged in by all ages and classes, except young children and those who are suffering from disease; but I do not think that any of them should be taken in larger quantities than half a pint at a time, and then not of a very strong infusion when they consist of tea or coffee. This amount I consider to be the outside allowance; and those who exceed it are not to be considered as entitled to the appellation by which tea-drinkers of all classes designate themselves; for however correct others may be in calling them *teetotallers*, they are not really *temperate*, however carefully they may appropriate to themselves that term.

SUB-SECT. A.—TEA, COFFEE, COCOA, AND CHOCOLATE.

1333. TEA, with reference to its different qualities and prices, has been described at page 284. It is, therefore, unnecessary to allude to them here. Most people are now agreed, that black tea is not only more wholesome than green tea of the purest kind, but that it is much less liable to adulteration. Every one, therefore, who values his health, and that of his family, should confine himself and them to the use of black tea; or, if he has so long been accustomed to the use of green tea as to dislike the beverage without it, let him take one-eighth only of the green, and let that be of the choicest kind. Cheap Hyson and Twankay are almost always very much adulterated, and should not be used on any account.

1334. THE ACTION OF STRONG TEA on the human body is very exhilarating and refreshing; and when it is perfectly pure, and used in moderation, it is rather stomachic than otherwise. Either black or green tea, taken in a very strong infusion, and especially the latter, causes first of all a pleasant degree of liveliness, followed by wakefulness, which at last merges into disturbed and uneasy sleep, in awaking from which there are sometimes most distressing symptoms of depression. For this reason habitual drinkers of strong tea often require their breakfast in bed, because it is not until they have had their morning's allowance of this article that they lose the effect of the last night's indulgence in it. This is particularly the case with the female sex, when they have recourse to it in order to remove those distressing headaches over which green tea has a considerable temporary power; but, as in the case of most similar remedies, only aggravating the cause of the evil while it removes the effect. Strong tea, taken habitually, has a tendency to produce indigestion, unless it is used by those who take violent exercise; for as it confers the power of sustaining muscular fatigue in a ratio quite as great as alcohol, so if that power is not exercised the abused stomach rebels at being trifled with, and indigestion is always the result.

1335. THE METHOD OF MAKING TEA is too well known to need full description, especially as it has been already alluded to at par. 857. A metal teapot, as thin as possible, so as not to cool the water, is the best kind, and a thick earthen one the worst. Soft water should be preferred, or if that cannot be procured, add five grains of soda to an average-sized teapot with the tea. The pot should always be warmed before putting in the tea; and the harder the water the longer it must stand to get the flavour out. If soda is used, the teapot should not be more than half emptied before the second water is added, as it causes almost all the strength of the tea to be taken out in the first infusion. Some people only add it with the second water, and in that way equalize the two cups; and this is a very good plan, if the water is kept boiling hot for the purpose.

1336. COFFEE is even more stimulating than tea in its effects upon the system, but it is not followed by the same depressing effects. It also agrees with most stomachs, and while it supports the nervous and muscular systems quite as well, or even better, it is not so liable to produce indigestion when taken in large quantities. Its qualities, and the modes by which it is adulterated with chicory, &c., are given at page 286.

1337. COFFEE is made in a variety of ways, or, at least, with a great number of machines; but they may be divided into three—1st, *by simple boiling*; 2nd, *by boiling with concentration*; and 3rd, *by infusion*; but prior to these it is necessary to consider the methods by which it may be converted at home from the green state, in which it is imported, into that in which it is to be used as the material for making "coffee." At par. 862, the reader is advised to purchase his coffee ready-roasted, but not ground; but as many may prefer to roast it themselves, both the methods are here given.

1338. TO ROAST AND GRIND COFFEE, two machines are necessary—1st, a *coffee-roaster*; and 2nd, a *coffee-mill*. The roaster is a closed iron cylinder, which may either be used in front of the kitchen-fire, or it may be made to act with a small fire of its own. When a smoke-jack is used in the kitchen, the coffee-roaster need only be a plain iron cylinder, with a sliding or hinged door, and, in fact, of the size and shape of an ordinary candle-box. If this is put into the cradle-spit, shown in *fig.* 67, it will revolve with the smoke-jack without trouble, and the berries need only be occasionally examined to ascertain whether they are brown enough. The sliding-door allows of this without taking the roaster out of the cradle, and it is only necessary to lift the spit out of the chain, when the door may be pushed back readily enough. The roaster must not be nearly half-filled, as the berries swell a good deal, and they must have room to change their places or some will be more done than others. A pound of coffee will, on the average in this way, take about an hour and a half to roast, as it must not be put close to the fire at first; but so much depends upon the power of the fire, and the proximity to it, that the above will be of very little use. The smell and the colour are the only guides as to its being sufficiently done. As soon as the coffee is roasted, it should be cooled as rapidly as possible in the roaster, and then transferred into wide-mouthed glass-bottles well corked. The quantity for each day only should be ground in a hand-mill, the nature of which is too simple to need description.

1339. **Simple Boiled Coffee** is usually made in an ordinary coffee-pot, with a long spout and handle. From an ounce to two ounces of the recently-ground coffee (with or without a proportion of chicory, the flavour of which is liked by some) is put in and heated on a hob or hot plate in the pot, which is to be filled up with one pint of boiling water, and put on a slow fire till it shows the slightest evidence of boiling, which it will do in a very few seconds. Then strain it through a muslin sieve or bag, and, after washing out the pot, return it into it, and warm up to the boiling point. After this it must stand on the hob for about five minutes, when it will pour out quite clear.

Another Method consists in tying up the coffee *loosely* in a muslin bag, and boiling it in the water for ten minutes; after which it may stand for a few minutes, and it will then be fine.

In the Ordinary English Method the coffee is put into the pot with the water, and boiled up as above; a teacupful is then poured out, and returned into the body of the pot, after which it is allowed to stand five minutes, when it ought to come out clear.

To **Refine Coffee** thus boiled, isinglass, white of egg, soleskin, and other kinds of albumen are sometimes used. When it is wished to be very clear, the best plan is to beat the white of an egg up with two or three table-spoonfuls of cold water, and mix that in with the dry coffee, which is then to be boiled as usual. The egg, in coagulating, entangles the fine particles of the coffee, and prevents them escaping into the fluid. This is far the best way of using egg or isinglass.

1340. **The Concentrated Coffee**, used in France for making their *café au lait*, is often now made by the ordinary process; but in the old French families and hotels, the plan is adopted of making a very strong decoction, and boiling it slowly till it is concentrated to the colour and almost the thickness of treacle. This is, in fact, very similar to the essence of coffee sold in this country, except that it is made of genuine coffee, without chicory, and liquorice, which is not often the case here. In making it the aroma is lost, in great measure, but the raw flavour of the coffee, so much complained of by many people, is likewise got rid of. In an old French hotel, where I stayed in Paris, twenty-four years ago, the coffee was thus made, and occupied twenty-four hours in its preparation; one day's consumption being, in fact, always on the fire in separate vessels. For mixing with large quantities of milk, this is particularly agreeable to the palate, but not for the ordinary coffee as taken in this country.

1341. **Infused Coffee** merely requires a machine with a strainer perforated with fine holes, and when this is provided it matters not whether the water finds its way out by the force of gravity or by the power of the human arm. The machine should always be previously warmed, and if the infusion is made by two separate mashes, as in brewing beer, it will help to extract all the goodness better. For those who like the raw taste of the berry this plan is the best, especially as it does not allow the evaporation of the aroma; but among them I confess that I do not rank myself, as the disagreeables more than counterbalance the agreeables. The machines devised for making coffee in this way are almost as numerous as the days of the year; and I am not aware of any one very superior to its competitors, the common coffee-filter (*fig.* 104) being the most simple, and costing in block-tin about 4s. to 5s.

1342. **All the above Preparations** of coffee are either taken plain or sweetened with sugar, or syrup, or sugar-candy, and with boiled milk or cream, or both. If the first is used, the patent sugar is the best for the purpose.

1343. **Cocoa** is prepared according to the different form in which it is to be used. Its powers are less exciting and stimulating than tea or coffee, though it contains a certain proportion of the same principle (see par. 854). If *cocoa-nibs* or *flake-cocoa* are to be prepared, they require boiling slowly for two or three hours, half an ounce being sufficient for a pint and a half of water. The various *prepared cocoas* sold in tins, as Fry's, the Soluble, &c., are made by mixing a tea-spoonful and a half in a little boiling water till dissolved, adding sugar to the palate, and then filling up with boiled milk.

1344. **Chocolate** requires for its proper preparation a muller, which is a part of the chocolate pot. The handle comes through the lid, and is rotated rapidly between the open palms. Scrape one ounce to two of the chocolate cake, and put it in with an ounce of sugar, over which half a pint of boiling water is to be poured, then put on the fire and turn the muller with one hand till it boils up, when an equal quantity of hot milk is to be added, and the whole well mulled with both hands on a stove or hot plate. When sufficiently frothy (or mulled) serve.

SUB-SECT. B.—COOLING BEVERAGES.

1345. The following list of cooling drinks are all simply of the above character, and are all wholesome enough when taken in moderate quantities. They have no other effect upon the system, except soda and potash-water, which should contain a small proportion of alkali, and therefore to act as anti-acids. On the other hand, imperial contains a slight excess of acid, and the supertartrate of potash is a diuretic, so that it has a considerable weakening effect upon those whose kidneys are easily acted on. Lemonade also contains a free acid, but this has no great effect upon the secreting organs. But these are too often flavoured with ethereal compounds instead of the genuine fruits. Nevertheless in some cases pure syrups may be purchased at prices very little above what they would cost if made at home.

1346. In point of economy, when made at home they will be found to cost very little less than the prices sometimes charged for the articles when made from essences as sold by the public dealers. This will be rendered evident by an examination of the annexed list of prices charged by Mr. Sainsbury, of the Strand, whose productions are so well known for their genuineness and flavour, as to need no comment here. They are as follows:—

SAINSBURY'S FRUIT ESSENCES.

	Pint.		½-pint.		¼-pint.	
	s.	d.	s.	d.	s.	d.
Essence of lemonade, with or without ginger	2	6	1	4	0	10
Raspberry, orange, currant, cherry, and apple essences	3	6	1	10	1	0
Foreign pine-apple and mulberry	5	0	2	6	1	6

A table-spoonful to a tumblerful of water makes a beverage adapted to be drunk either still, or mixed with the powders mentioned in the next paragraph, or carbonated by means of the gazogene. (See par. 1349).

1347. RECEIPTS FOR COOLING BEVERAGES:

(a) LEMONADE.—Pare two dozen of tolerably-sized lemons as thin as possible, put eight of the rinds into six quarts of hot, not boiling, water, and cover it over three or four hours. Rub some fine sugar on the lemons to absorb the essence, and put it into a china bowl, into which squeeze the juice of the lemons. To this add one pound and a half of fine sugar, and when cool it is fit to drink.

Another.—Pare six lemons very thin, pour on the peel a quart of boiling water, when cold add the juice of 12 lemons, four oranges, and another quart of *cold* water. Sweeten with two pounds of loaf sugar, and strain it through a bag. It may be made less expensively by substituting cream of tartar for some of the lemon juice, allowing a quarter of an ounce for each lemon.

(*b*) ORANGEADE.—Squeeze the juice from a dozen of the fruit; pour boiling water on the peel of four, and cover close. Boil water and sugar to a thin syrup, and skim it. When all are cold, mix the juice, the infusion, and the syrup, with as much more water as will make a rich sherbet; strain through a jelly-bag, and cool.

(*c*) CRANBERRY WATER.—Bruise a cupful of cranberries, mixed with a cupful of cold water. Boil two quarts of water with a tablespoonful of oatmeal and the rind of a lemon; then stir in the cranberries, and add two ounces of Lisbon sugar, and a quarter of a pint of white wine; simmer for a quarter of an hour; then strain and leave to cool.

(*d*) RASPBERRY VINEGAR AND WATER.—No draught is more agreeable to a feverish patient than a dessert-spoonful of raspberry vinegar mixed in a tumbler of cold water. It should never stand in any metal or glazed vessel, for the acid would act upon their surfaces to an injurious extent.

(*e*) RHUBARB SHERBET (A REFRESHING DRINK).—Boil six or eight sticks of clean rhubarb ten minutes, in a quart of water; strain the liquor into a jug, in which is the peel of a lemon cut very thin, and two table-spoonfuls of clarified sugar; let it stand five or six hours, and it is fit to drink.

(*f*) APPLE WATER.—Cut two large apples in slices, and pour a quart of boiling water on them, or on the same roasted; strain two or three hours after, and sweeten lightly.

(*g*) IMPERIAL.—Scald a jug, and put in it from a quarter to half an ounce of cream of tartar; then add a quart of boiling water, flavour it with a little lemon peel, or essence of lemon, and sweeten to the palate.

(*h*) TO MAKE IMPERIAL WATER EFFERVESCENT.—Let one ounce of cream of tartar, half a pound of loaf sugar, one lemon, and one gallon of water be boiled together five minutes. When nearly cool, put in a little barm spread on toasted bread; let it stand thirty-six hours, and then bottle. Soak the corks in warm water, and tie them down. It will be fit for use in three days.

(*i*) CONCENTRATED LEMONADE.—Take one dram of essence of lemon, one and a half ounce of citric acid, two and a half pounds of loaf sugar, and one pint of water. To make the syrup, put the sugar into the water when cold, and let it boil gradually, then pour it hot on the acids. To make the beverage, put a table-spoonful of the lemonade into a tumbler of water.

(*j*) VINEGAR AND LEMON WHEYS.—Pour very gradually into boiling milk as much vinegar or lemon juice as will serve to curdle it; dilute with hot water to an agreeable smart acid taste, and put in a bit or two of sugar. This is less heating than if made with wine; and if only to excite perspiration, answers as well.

(*k*) GINGER BEER.—Put into a large pan two pounds of loaf sugar, two ounces of bruised ginger, and two gallons of cold water. Boil the whole for half an hour, skimming it well, then pour out into a large earthenware jar, adding a lemon sliced, and half an ounce of cream of tartar. Let it cool to new milk heat, then add a teacupful of yeast, and allow it to ferment for two days; strain it, and bottle in small stone bottles, with the corks firmly tied down.

(*l*) CURRANT WATER is made by dissolving a small table-spoonful of currant jelly in a tumbler of water, and adding from ten to fifteen grains of tartaric acid. Any other fruit jelly may be converted into a refreshing drink in the same way.

1348. CARBONATED WATERS are made in two different methods, by the former of which the carbonic acid alone is forced into the liquid, while by the latter the salts from which it has been evolved are also contained within it. In the one case a machine of some kind is required, in which the gas is generated, and from which it passes into the liquid to be acted on. On the large scale, and when intended to manufacture beverages for sale, these machines are cumbrous and expensive; but for private use they are now made on a simple construction, the invention of a Frenchman, and are universally to be met with under the name of *gazogenes*. Carbonic acid gas is produced by the addition of any acid to any carbonate which has a greater affinity to it than to carbonic acid, and, as a consequence, discards its old love for the sake of its new. By the usual domestic method, carbonate of soda or potash and citric or tartaric acid are mixed together in water, and immediately evolve the carbonic acid gas, leaving in the solution a tartrate or citrate of soda or potash. Under ordinary circumstances, and for occasional use, there is no objection to this salt; and in some cases, where it is given medicinally, it is cooling and useful; but when frequently taken it is lowering and debilitating to the stomach, and therefore the use of the machine is far preferable, particularly as the expense is exactly the same after its prime cost has been paid, the same powders, namely, carbonate of soda and tartaric acid, being used in either case.

1349. THE GAZOGENE consists of two glass vessels (*fig.* 102, A B); one of these (A) has a metal tube (C), which fits into its neck so as to be water-tight at the joint, and rises nearly to the top of the upper vessel (B), from which, also, is a cock (D). In order to use it, the two powders (bicarbonate of soda and tartaric acid) are placed *dry* in the lower vessel (A) by removing the metal tube (C), which is then replaced, and firmly pushed down into its socket. The upper vessel (B) being now turned with its mouth upwards, is filled to *the top of the glass part* with the water or other fluid to be rendered effervescent. After this, the lower part (A), as previously charged, is turned down into the vessel (B), and the two while in this position are securely screwed together. When this is done they are turned up to their original position, immediately on which being done a little of the fluid flows over the top of the tube (C), and runs down into the vessel (A), where it mixes with the two powders, and causes the one to decompose the other, and thus liberate the carbonic acid gas, which is done with considerable force, so as to rise through the tube (C) and enter the fluid in the vessel (B), which becomes charged with it, and when let out by the tap or cock (D) is highly effervescent. This machine, if well made, and especially if gilt, will produce *soda* or *potash-water*, *lemonade*, *orangeade*, *ginger beer*, *currant-water*, or any other *flavoured beverage* in a state of effervescence. In order to obtain any of them, the following directions are necessary, in addition to the use of the machine and the powders sold with it. The cost of the former article is from £1 to £1 15s., or, when highly ornamented, a still higher price. The soda and acid powders are sold at 2s. to 2s. 6d. the dozen of each.

(*a*) SODA OR POTASH-WATER.—Fill the vessel (B) of the machine with pure water, in which have been dissolved from six to twelve grains of bicarbonate of soda or subcarbonate of potash. Then attach the other as already described, and use in an hour or two.

(*b*) FOR GINGER BEER, mix with half a pint of water and an ounce and a half of sugar (brown or white) from half a drachm to a drachm of powdered ginger; pour this into the vessel, and fill up with water, after which proceed as before.

(c) In order to act on lemonade, currant-water, or any other beverage, first make them according to any of the receipts under par. 1347, or dissolve their syrup; then put it in the vessel (B) and attach as in par. 1349. In about an hour and a half it may be used by turning the cock (D).

1350. **Effervescing Waters** are made extemporaneously by adding to twenty grains of bicarbonate of soda (or potash) fifteen grains of citric (or tartaric) acid; about half a tea-spoonful of coarsely powdered white sugar or a tea-spoonful of syrup may be added, and if desired two or three drops of essence of lemon. The soda with either of the acids makes soda-water; the potash, potash-water; and the addition of the lemon and sugar converts it into effervescing lemonade. If ginger-beer is desired, it is only necessary to add about ten grains of powdered ginger instead of the lemon essence. A table-spoonful of lemon-juice (obtained from half a lemon on the average) is equal to fifteen grains of the citric acid, and may be substituted for it and the essence with advantage. The method of proceeding in each case is as follows:—Dissolve the soda (or potash) in a wine-glassful of water with the sugar or syrup, and the essence of lemon or ginger where they are used; then dissolve the acid in an equal quantity of water (or squeeze the lemon) in another glass; pour the two together, and give *immediately*, as the effervescence soon goes off.

1351. **For Invalid Drinks**, see the chapter on the Management of the Sick-room.

1352. **Iced Beverages** are made by the addition of ice to other materials, by which their flavour is rendered more grateful to the palate. Clean and pure ice is necessary for the purpose, such as that sold by the Wenham Lake Company, for full particulars of which see the sub-section which treats of the preservation of food by ice. The following receipts are those which can be recommended:—

(a) **To Make a Sherry Cobbler.**—Reduce the ice into flakes by means of an ice-plane, or pound a quantity of ice quite fine in a coarse cloth, by beating it with a mallet; half fill a large tumbler with this powdered ice; add one or two tea-spoonfuls of powdered sugar, the rind of half a lemon, and one or two glasses of sherry; stir them well together, and drink through a small glass tube or a straw.

(b) **Mint Julep.**—Take three or four young sprigs of mint, fresh gathered, and put in a tumbler; half fill it with sherry; put some pounded ice in a second tumbler, and pour the mint and sherry over it, rapidly transferring the liquor several times from one tumbler to another, finally place the tumbler for a minute or two in ice, till the frozen particles form over the top.

(c) **Iced Water** merely requires a lump or two of clear ice (Wenham Lake is the best) to be put into fine spring water, which will be kept at the temperature of 32 degrees as long as any ice remains unthawed.

SECT. 10.—VEGETABLES AND FRUIT.

SUB-SECT. A.—REMARKS.

1353. The full consideration of this subject would embrace a very large field, inasmuch as for its due examination the whole range of gardening operations must be inquired into, which would demand a space almost equal to this whole book, and would therefore be manifestly out of place. All, however, which seems likely to be useful, is an inquiry into the *cost* of vegetables and fruit when produced in the garden or hothouse of the private individual. Sometimes, it is true, that he has no choice, and must either grow his own vegetables or go without them; but this is only the case in retired villages, or very small towns, as in almost all collections of people, in any numbers, vegetables are to be met with for sale in sufficient quantities and of tolerably good quality. The rent of the garden is seldom a matter for calculation, as it is generally attached to the house, and cannot then be well separated from it. If, however, a garden is to be paid for, it makes the cost by so much the higher. When the owner undertakes the labours of a garden, or even the superintendence of it, its produce may certainly be considered nearly all profit; but if this is not the case, especially when the master has no knowledge of gardening, the produce will be small and of a bad character, and the cost will be enormous. Let any housekeeper calculate what her vegetables and fruit cost her, independently of potatoes, and she will find that, on an average, 6d. a day will pay for them in most families where economy is practised, and 1d. per day will suffice to pay for them where money is an object. But let us allow 3d. a day for vegetables and the same amount for fruit, and then let us examine the cost of each when produced in the proprietor's garden.

SUB-SECT. B.—COST OF VEGETABLES.

1354. In order to have a regular supply of these articles, unless the work is done by the master of the house, a gardener must be hired for about forty days in the year, at 2s. 6d. per day on the average, which, in addition to the cost for seeds, will bring this item up to about £6 per annum, or nearly 2s. 4d. per week. So that in this calculation there will be a loss of 7d. per week, only balanced by the surplus amount of cabbages, &c., which will go towards feeding a pig, and in that way pay for the manure. If, however, a pig is not kept, or rent must be paid for the garden, there will then be a correspondingly increased loss. The above calculation does not include the charge for the cultivation of a flower garden, but solely for that employed in producing vegetables, exclusive of potatoes. When these last can be grown—that is, where there is ground calculated for them, which is not very often the case in old kitchen gardens—they may be cultivated at a great profit (barring the disease to which they have of late years been subject). These roots, however, require a fresh or virgin soil, or, at all events, one of a light and loamy nature, and not the old black soil which is so common in garden ground.

SUB-SECT. C.—COMMON FRUITS.

1355. Very little labour is required for the ordinary fruits grown in the open air; a few days' pruning being all that is necessary. We have therefore to set against an expenditure of 3d. per day, or £4 10s. per year, very little more than the 10s. 6d. for three and a half days' labour, in pruning and gathering the fruit. As a consequence, therefore, it may be considered that where a garden is attached to the house, with plenty of fruit, a saving to the amount of £4 may be calculated on; or, if rented, that the above sum may be prudently paid, and if any surplus fruit is sold, that also is a clear gain.

SUB-SECT. D.—FORCED FRUITS.

1356. As these may in all cases be considered luxuries, and neither necessary nor desirable as articles of food, the entire outlay in their production is an extravagance, and to be reckoned as such without any counterbalancing advantage in an economical point of view. When, however, the master has a strong partiality for gardening, and himself superintends this department, it is possible to cultivate forced fruits and sell them at a considerable profit; but this can scarcely be considered as a saving in the management of a family, but rather as a trade of itself. It is therefore quite unnecessary to enlarge upon it here, though I am quite aware that, when well carried out, a garden may be made to pay a good round sum by the sale of its forced produce in the nearest good market, as well as to afford plenty of vegetables and fruit to the house.

SECT. 11.—PRESERVATION BY SUGAR, SPIRIT, VINEGAR, SALT, ICE, &c.

1357. REMARKS.—Under this head are included the usual methods of preserving animal and vegetable substances, *with as little alteration of flavour as possible*. The means employed are various, but in every case the object is to avoid interfering with the original and peculiar flavour of the substance to be preserved, and at the same time they differ from cookery in one respect, namely, that they enable the article so preserved to be kept for a shorter or longer time before it is used, when in most cases it requires some further kind of cookery. From this description it will be apparent that the articles here named, with very few exceptions, should be kept in store, and are only thus prepared because they cannot at all times be obtained, and yet it is desirable to have them at command. The exceptions to this definition are only plain-salted meat, which is not generally kept, and iced creams and water, which do not keep long.

1358. The heads under which these articles are divided, are—1st, *sugar preserves*; 2nd, *bottling*; 3rd, *preserving in spirit* or *wine*; 4th, *in ice*; 5th, *by salting*; 6th, *in vinegar*; 7th, *by distillation*, and, 8th, *by drying*.

SUB-SECT. A.—SUGAR PRESERVES.

1359. FOR THIS PURPOSE one or more preserving pans are required, made with a cover to fit tightly, and a handle on each side. Where large as well as small quantities are made, a quart and a four-quart preserving-pan will suffice. They are generally made of copper or brass, on the supposition that the boiling prevents the acid in the fruit from acting on the metal, but this is a great mistake, and has led to serious results. The safest metal is block-tin, or doubly-galvanized iron; but these are apt to injure the colour of the preserves, which is avoided by the use of the modern enamelled iron pans, though they require watching, as they are apt to burn. Besides these, several wooden spoons, hair sieves, and other strainers will be required; and for jellies a large bag of flannel, made in the shape of a fool's cap, and about two feet deep. It should be strained to a small wooden hoop, and suspended by three cords.

1360. ALL FRUITS should be gathered in a perfectly dry state, free from dew or rain, and, if possible, from dust. The wooden spoons, hair sieves, and strainers used in making preserves, should be kept entirely for that purpose; and in this, as well as in every other operation of cookery, the most scrupulous cleanliness is necessary for success.

1361. QUALITY OF SUGAR AND TIME OF BOILING.—In order that the preserves shall have a good flavour, it is better to use the best refined sugar; the difference in the expense is not great, and there is much less scum, or waste, than in moist sugar. Nevertheless, in cheap useful preserves for children, which are meant to be eaten immediately, the common moist sugar may be advantageously used. It is necessary to observe, that the boiling of sugar, more or less, constitutes the principal art of the confectioner; and those who are not practised in this knowledge, and only preserve in a plain way for family use, are not aware that, in two or three minutes, a syrup over the fire will pass from one gradation to another, called, by confectioners, "degrees of boiling," of which there are six, and these subdivided. It is very necessary, therefore, to guard against under-boiling, which prevents sweetmeats from keeping; or from quick and *long boiling*, which brings them to a candy. It is better, therefore, to hang the preserving-pan on a hook, at some height above the fire, if an open one, that there may be no danger of burning the fruit; but if there is a hot-plate, there will be no difficulty experienced. After the sugar is added, stir gently, but continually, till the preserve is made, carefully clearing away the scum as it rises. It is advisable to boil all fruits for jellies and jams at least twenty minutes before the sugar is added, that the watery particles may evaporate; and when this is done a less portion of sugar is required. The sugar should always be heated in an oven or before the fire previously to adding it to the fruit. Jellies of fruit made with an equal quantity of sugar (that is, a pound to a pint) require no very long boiling. Attention, without much practice, will enable a person to do any of the following sorts of preserves, sweetmeats, &c.; and they are as much as will be wanted in a private family. The higher kinds of preserved fruits may be bought at less expense than they can be made.

1362. THE QUANTITY OF SUGAR varies greatly, as will be seen in the following receipts. The old fashion of equal weights of fruit and sugar is only required in very acid fruits.

1363. JELLIES are made by boiling fruit with sugar, and then straining it through a flannel jelly-bag, or, as is sometimes done, through a fine hair sieve. By many people a little isinglass is added, but this is not always *necessary*, though it adds greatly to the stiffness of the jelly. They should be cooled quickly, and kept in a dry but cool place.

1364. TO CLARIFY SUGAR FOR SWEETMEATS, OR OTHER PURPOSES.—Sugar should not be powdered before making into syrup, or it will render it turbid. Break as much as will be required in large lumps, put a pound to half a pint of water, in a bowl, and it will dissolve better than when broken small. Set it over the fire, with the well-whipped white of an egg; let it boil up, and when ready to run over, pour a little cold water in to give it a check; but when it rises a second time, take it off the fire, and set it by in the pan for a quarter of an hour, during which the foulness will sink to the bottom, and leave a black scum on the top, which take off gently with a skimmer, and pour the syrup into a vessel very quickly from the sediment. When refined sugar is used for making syrup it need only be melted over the fire in a quarter, or, at most, one-third its weight of water; and as this evaporates, the syrup must be taken up with a large slice, and let to fall again, upon which, if it forms a broad sheet as it falls, it is said to be boiled to "a candy height." If it has not been boiled quite so far, or the water has been in greater quantity, the sheet is formed but imperfectly, and the syrup is said to be at a "weak candy height." If in shaking the slice of syrup when in this state, it runs over in the form of the feathers of a quill, or drops like pearls into water, falling to the bottom in solid and brittle globules, it is said to be at a "full candy height;" and if in that state it is stirred till cold it forms a dry powdery mass. For adding to preserved fruits, the syrup is boiled to a *weak candy height*, and poured hot upon the fruit; the juice of the fruit, of course, weakens the syrup, which must, therefore, the next day be poured off the fruit and re-boiled to the weak candy height, and then poured on again; this must be repeated again and again if the fruit is very juicy. To preserve fruits for candying or drying, the syrup must be used of the full candy height, and half cold; and it should be boiled up again as above if the fruit is extremely juicy, until it is supposed that the syrup is no longer weakened, when the fruit is taken out and drained.

1365. TO CANDY ANY SORT OF FRUIT.—When finished in the syrup, put a layer of the fruit into a new sieve, and dip it suddenly into hot water, to take off the syrup that hangs about it; then put it on a napkin before the fire to drain, and do some more in the sieve. Have ready sifted double-refined sugar, which sift over the fruit on all sides till quite white. Set it in a single layer on sieves in a lightly warm oven, and turn it two or three times. It must not be allowed to be cold till dry. Watch it carefully, and it will have a beautiful appearance. When any sweetmeats are directed to be dried in the sun or in a stove, it will be best in private families where there is not a regular stove for the purpose, to put them in the sun on flagstones, which reflect the heat, and place a garden glass over them to keep insects off; or, if put into an oven, to take care not to let it be too warm, and watch that they are done properly and slowly.

1366. To Keep Preserves and Sweetmeats, they should be protected carefully from the changes in the outer air, and in a very dry place. Unless they have a very small proportion of sugar, a warm place does not hurt; but when not properly boiled—that is, long enough, but not sufficiently quick, heat makes them ferment, and damp causes them to grow mouldy. They should be looked at two or three times in the first two months, that they may be gently boiled again, if not likely to keep. To make quite sure of their keeping well, or to send abroad, while they are boiling and before they are finished pour in a wine-glass of brandy to each quart of preserves, and give them one boil, then pour the preserves into a jug before putting them in pots.

1367. In Tying Down Preserves, the great point is to exclude the air, though somewhat paradoxically, they do not keep well in closets which are too closely shut up, apparently from the encouragement which it affords to the growth of mould. This exclusion is by no means so easy as may be supposed, for bladder, though apparently air-tight, is not really so, and especially as generally applied—that is, quite fresh, and not half soaked. Paper smeared with white of egg is much more secure than the above material, and answers well enough for all common preserves. In order to secure these articles with as much certainty as possible, proceed in any of the annexed modes—*the second being the best.*

(*a*) The old-fashioned method is to cut a piece of writing-paper exactly the size of the jar, soak it in brandy, then lay it smoothly on the top of the preserve, and tie down over the neck with bladder. This answers very well if the bladder is soaked in water for two days, and its *internal* or *smooth* surface is placed inwards.

(*b*) Instead of dipping the round of paper in brandy, dip it in white of egg; or omit it altogether, and press down carefully over the jar a piece of silver paper, well smeared with white of egg, cutting the paper an inch larger than the jar, and pressing it well down the sides with the fingers. This is very effectual and *clean.*

(*c*) Melt some fresh mutton-suet, and when nearly setting, pour it over the preserve until it is about a quarter of an inch in thickness, taking care not to grease the edge of the jar. When cold, tie down either with brown paper or bladder, or with the egged-paper (see *a* and *b*).

(*d*) In bottled fruits, &c., bladder, *well* soaked, is the best covering; and when extra precaution is required, after it is quite dry, dip the whole of the bladder, and beyond its edge, in melted resin and bees-wax, prepared as follows:—

Bees-wax, ¼ lb.
Common resin, 1 lb.
Red lead, 1 oz.

Melt the two first together, then stir in the lead, and continue stirring till it begins to get thick from cooling; then dip the bottles, turning them up quick.

1368. Receipts for Sugar Preserves:—

(*a*) To Preserve Rhubarb.—To every twelve pounds of fruit, peeled and cut as for tarts, put the same weight of lump sugar a quarter of a pound of bitter almonds blanched and pounded, the juice of a lemon and the peel chopped fine. After putting the sugar to the rhubarb let it stand through the night, then boil it; when it begins to thicken add the other ingredients, together with a wine-glass and a half of pale French brandy. A teaspoonful of ginger is thought by some people to be an improvement.

(*b*) To Preserve Strawberries.—To one pound of fruit add three-quarters of a pound of sugar; pound it fine and strew it over the fruit, and let it stand twenty-four hours, then set it over a slow fire till the sugar is dissolved; take it off and let it stand till cold; make it hot three or four times, leaving it to get cold each time; when the syrup is quite clear, put the whole into jars or glasses.

(*c*) Raspberry Jam.—Weigh the fruit, and add three-quarters of the weight of sugar; put the former into a preserving-pan, boil and break it, stir constantly, and let it boil very quickly; when the juice has boiled an hour, add the sugar, and simmer half an hour. In this way the jam is greatly superior in colour and flavour to that which is made by putting the sugar in at first.

(*d*) Gooseberry Jam (Three Sorts).—For common *red jam*, put twelve pounds of red hairy gooseberries, gathered dry and ripe, and picked clean, into a preserving-pan, with a pint of currant juice. Let them boil, and beat them with a wooden spoon till they break; then add six pounds of Lisbon or lump sugar, and simmer slowly twenty or thirty minutes. Gooseberries require long boiling, but make a good and cheap jam, which generally keeps well, and answers for children's use.—In making *green gooseberry jam*, it is usual to add a little spinach juice instead of the currant juice, and to use a double portion of white sugar. (Excellent for puddings at all times.)—In *white gooseberry jam*, the finest ripe white gooseberries must be gathered and picked, the fruit put into a jar, in a pan of water over the fire till they break, and then transferred to the preserving-pan, with three-quarters of a pound of sugar to each pound of gooseberries; they will require half an hour's boiling before the sugar is added to reduce them to jam.

(*e*) Red or White Currant Jam.—Let the fruit be very ripe, pick it clean from the stalks, bruise it, and to every pound put three-quarters of a pound of loaf sugar; stir it well, and boil half an hour, then add the sugar, boil and skim.

(*f*) Black Currant Jam.—To every pound of black currants add the proportion of a pound and a quarter of sugar, made into a syrup with half a pint of water; boil the fruit half an hour before adding the syrup, and a quarter of an hour after. This is one of the most useful, wholesome, and delicious jams that can be made.—*Or*, this preserve may be improved by adding to four pounds of black currants one pound of white and one pound of red currants, and then proceeding to boil, *without water*, and adding the sugar in the proportion fixed above.

(*g*) Green Currant Jam.—Weigh equal portions of unripe red currants and sugar, set the fruit over the fire, at some distance, with a small part of the sugar, breaking the fruit a little that the juice may prevent it burning; stir it continually, and let it remain for a quarter of an hour, then add the rest of the sugar, and boil up for a quarter of an hour longer.

(*h*) Blackberry Jam.—The common blackberry (growing wild in great plenty in most parts of England) requires to be gathered ripe and dry, to be carefully picked, boiled for half an hour, and then half the weight of moist sugar added and boiled up again for ten minutes. It is a most wholesome preserve for children.

(*i*) A Mixed Plum Jam.—Take apricots, greengages, or any kind of plums, divide them, take out the stones, simmer over the fire for half an hour, then add half the weight of the fruit in loaf sugar and boil a quarter of an hour. To this jam cherries, apples, or any other common fruit may be added.

(*j*) Mixed Preserve for Children.—Take raspberries, red currants and white currants, in any quantities which are left, or gooseberries and black currants in equal quantities; boil them together for twenty minutes or half an hour, according to their weight; then common moist sugar, dried and heated before the fire, must be added in the proportion of three-quarters of a pound to each pound of fruit, and boiled five minutes longer.

(*k*) Carrot Jam.—Boil some carrots till quite tender, and rub them through a sieve. To one pound of the pulp add three-quarters of a pound of loaf sugar; boil it to a jam, and when nearly cold add the juice and grated rind of two lemons, and half a teaspoonful of essence of cloves or nutmegs. This jam is not very good, as compared with some others, but for children it is better than nothing, and very wholesome.

(*l*) Greengage Jam.—Peel the fruit and divide, take out the stones, and blanch the kernels if you wish them added to the jam. Boil the broken stones and parings in a little water till the water is half reduced, and add a little spinach juice to colour it; then strain it and put in the preserving-pan with the fruit. Simmer a quarter of an hour, then add equal weight of sugar, boil and skim for twenty minutes longer.

(*m*) Preserved Greengages. — Select greengages full grown, but not the least ripe; prick them with a fork to the stone four or five times, and as soon as pricked put them in water in a preserving-pan; when they are all done, put them over a slow fire to simmer very gently, so as to make them tender without breaking; try them with a fork, and when tender to the stone put them in cold water, and, as some will get soft before others, they must be watched carefully. Let them lie in water a day and night; strain them, and when well drained, put them in an earthen pan, and pour over some boiling hot clarified sugar, sufficient to well cover them (see par. 1364). Put a paper over them, the next day pour off the syrup and boil it; if three quarts, or thereabouts, boil for ten minutes; then pour it over the fruit, and again lay the paper over them. Boil the syrup every other day in the same manner, until it is about the consistence of cream (in five or six times boiling). If the syrup shrinks, so as not to keep the fruit well covered, add a fresh supply. While boiling the syrup the third time, put the greengages in, and let them simmer gently for a short time, which will bring them green; and the last time of boiling the syrup also let them simmer a little in it.

(*n*) Green Apricots.—Take those the size of a nutmeg, and simmer in water till tender; then put them in cold water, and next day drain, and proceed as with green gages (see *m*).

(*o*) To Preserve Apricots Whole.—Take ripe apricots, slit them at the top, and with a small stick, put in at the stalk end, force out the stone, then peel them, and let them simmer gently in a preserving pan with water till tender, but not so much so as to break. Put them into cold water, and the next day drain them on a coarse sieve for four or five hours; then put them on a flat earthen pan so as not to lay them one on the other more than can be helped; proceed as with the greengages (see *m*).

(*p*) To Preserve Cucumbers.—Select small cucumbers, or larger ones as green and free from seeds as possible, put them into strong salt and water in a narrow-mouthed jar, with a cabbage-leaf to keep them down. Tie a paper over them, and set them in a warm place till mellow. Wash and set them over the fire in fresh water with a little salt and a fresh leaf over them. Cover close, and do not let them boil; if they are not a fine green, change the water, and again make them hot and cover them as before. When they are of a good green, take them off; let them stand till cold. Cut the large cucumbers in quarters, take out the seeds and soft part, put them all into cold water for two days, changing it twice each day to take out the salt. Make a syrup of one pound of loaf sugar to half a pint of water; skim, and when clear, add the rind of a lemon, and one ounce of raw ginger, with the outside scraped off. When the syrup is pretty thick, take it off, and when cold put in the cucumbers, having wiped them dry. Boil the syrup once in two or three weeks; repeating this three times (see par. 1364), and strengthen it, for the danger of spoiling is at first. The syrup must be quite cold when it is put to the cucumbers.

(*q*) To Preserve Siberian or American Crabs.—To one pound of crabs, take a pound of fine sugar, the juice of a lemon, and a little syrup from common apples. Dissolve the sugar in it; let it boil, and skim clear; then prick the crabs, and put them into the syrup. Let them boil gently, till a straw will run through them. Put them into pots, and cover well with syrup.

(*r*) To Preserve Strawberries Whole. Take the weight in double-refined sugar, with a quarter of a pint of water to each pound, and boil to a thick syrup. When cold, put in the strawberries, and let them stand a night. Drain them, and boil the syrup up again three times, which will thicken it. Put the strawberries in *cold*. Put them in glasses, over which tie paper, and let them stand in a cold place.

(*s*) To Preserve Greengages Whole. Prick them all over with a pin, then put them in scalding water, let them simmer, strain them, and take their weight in sugar; put the sugar into the preserving pan, with a quarter of its bulk of water; let it boil well and skim very clear; put in the plums, let them boil up once, take them off, and set them by till next day; then take them out one by one from the syrup, boil it, and skim very clear; put in the plums, and let them boil very gently for twenty minutes; take them off as before, let them stand till cold, then put them into the jars, tying them up very close.

(*t*) Preserved Grapes in Bunches.—Take out the stones from the grapes with a pin, breaking them as little as possible; boil some clarified sugar nearly to "candy height, (see par. 1364); then put in sufficient grapes to cover the bottom of the preserving-pan, without laying them on each other, and boil for five minutes, merely to extract all the juice; lay them in an earthen-pan, and pour the syrup over them; cover with paper, and the next day boil the syrup, skimming it well for five minutes; put in the grapes, let them boil a minute or two; put them in pots, and pour the syrup over them, after which tie down.

(*u*) To Preserve Pine-apples.—Gather the pines with small tops, or if foreign fruit select in the same way; then with a sharp knife take out the little prickly leaves between each flake, but be careful not to go too near the top; put them into salt and water a little warm, to make them turn yellow, which will be in about twenty-four hours; then place them on a slow fire in water and lemon-juice, composed of three parts of the former to one of the latter; do not keep them too long on the fire, for fear of losing the top; when they are done put them in cold water; then take them out and let them be thoroughly dried; put a good rich syrup to them, which must be changed for fresh syrup two or three days afterwards (see par. 1364). This is a West India receipt.

(*v*) Quinces Preserved Whole.—Pare and put them into a saucepan with the parings at the top, then fill it with hard-water, cover it close, set it over a gentle fire till they turn reddish; let them stand till cold, put them into a clear thick syrup, boil them a few minutes; set them on one side till quite cold, boil them again in the same manner; the next day boil them till they look clear, if the syrup is not thick enough, boil it more; when cold, put brandied paper over them. The quinces may be halved or quartered.

(*w*) To Preserve Melon like Ginger.—When the melon is nearly ripe, pare it thin, and cut it into pieces about the size of ginger; cover it with salt-water, changing it every day for three days; then put it in clear spring water, changing it twice a day for three days. Then make a thin syrup, and boil it together with the melon once every day for three times. Next make a thick syrup, adding the rind of one or more lemons, according to the quantity of melon, cut into narrow strips, and the juice squeezed in. Then add some best white ginger, with the outside cut off, so as to make the syrup strong of the ginger. This should be boiled, and when cold put to the melon.

(*x*) To Preserve Apricots Whole.—Take the largest and cleanest apricots to be got. Pick out the stones with a silver skewer, or slit them down the sides with a silver knife. Take nearly their weight in good lump sugar; dip each lump in water, and put over the fire; let it just boil, skim, and put by till cold. Then pour it over the fruit in the preserving-pan, warm very gently, and only allow them to simmer; then put them by till next day, and warm them again, continuing this till they look clear. Then take the fruit from the syrup. The latter must now be well boiled and skimmed, and when cold poured over the fruit.

(*y*) To Prepare Barberries for Tartlets.—Pick barberries that have no stones from the stalks, and to every pound add three-quarters of a pound of lump sugar; put the fruit into a stone jar, and either set it on a hot hearth or in a saucepan of water, and let them simmer very slowly till soft; put them and the sugar into a preserving-pan, and boil them gently fifteen minutes. Use no metal but silver.

(*z*) To Preserve Damsons and Winesours.—Fill a jar with the plums and place it over the fire in a pan of boiling water. Let it remain till the plums are perfectly tender, but unbroken, then remove it. Make a syrup of a pound of sugar and a pint of water for every pound of fruit, boil and skim it well, then pour it boiling over the fruit; let it remain five or six days, then reboil the syrup, adding to each pint a quarter of a pound more sugar. Pour it again boiling over the fruit, and let it stand a day before it is covered.

1369. Receipts for Damson Cheese, &c.:

(*a*) Damson Cheese.—Gather the fruit when full ripe, and to every peck of damsons allow four pounds of lump sugar. Set the fruit in an oven and let it remain until soft; when cold, rub it through a colander or coarse hair-sieve; then put it into a preserving-pan, and boil it quickly half an hour; after which add the sugar and kernels, and boil together half an hour longer, stirring it all the time. Wet the moulds with brandy or vinegar. When cold, put the cheese into them. Put on a paper dipped in vinegar, and keep them in a dry place, or close them, according to the directions given at par. 1367, *b*.

(*b*) Mussel-plum Cheese.—Weigh six pounds of the fruit, bake it in a stone jar, remove the stones, and take out the kernels to put in. Pour half the juice on two pounds and a half of good Lisbon sugar; when melted and simmered a few minutes, skim it, and add the fruit. Keep it doing very gently till the juice is much evaporated, taking care to stir it constantly, lest it burn. Pour it into small moulds, pattypans, or saucers. The remaining juice may serve to colour cream, or be added to a pie.

(*c*) Apricot Cheese.—Weigh an equal quantity of pared fruit and sugar, wet the latter a very little, and let it boil quickly, or the colour will be spoiled; blanch the kernels, and add to it. Twenty or thirty minutes will boil it. Put it in small pots or cups half filled.

1370. Receipts for Marmalade:—

(*a*) Apple Marmalade.—Pare seven pounds of apples, put them on to stew in a preserving-pan with a pint of water, when they are all dissolved rub them through a strainer; add the same weight of sugar as of apples and the grated peel of four lemons, boil nearly an hour, *stirring it all the time*, then add three ounces of essence of ginger ten minutes before taking it off the fire. Wet some shapes with any spirit and fill them. This is very useful throughout the winter.

(*b*) Barberry Marmalade.—The barberries must be washed, stoned, and boiled in cold water till tender, in the proportion of a quarter of a pint of water to every pound of fruit. Then prepare a syrup, of a pint of water and a pound and a half of sugar to every pound of barberries. When the syrup is quite stiff, boil the barberries again till they become a jam, then add them to the syrup and stir altogether over the fire, simmering it only for a few minutes, and turn it out into pots.

(*c*) To Make Transparent Orange Marmalade.—Take very pale Seville oranges, cut them in quarters, take out the pulp and add to it a small proportion of the pulp of China oranges. Put it into a basin, and pick the skins and seeds out; put the peels into a little salt and water, and let them stand all night, then boil them in a good deal of spring water till they are tender, cut them in very thin slices and put them to the pulp. To every pound of marmalade put one pound and a half of double refined sugar, beaten fine. Boil them gently together for twenty minutes; if it is not clear and transparent, boil it five or six minutes longer; keep stirring it gently all the time, and take care not to break the slices; when cold put it into jelly-glasses or preserving-pots.

(*d*) **Orange Marmalade (the Common Way).**—Cut the oranges very thin, and to every pound of fruit put a pint of spring water, then boil it gently for three or four hours. When quite soft add one pound and a half of loaf sugar to every pound of fruit, and boil it an hour.

(*e*) **Quince Marmalade.**—Pare and core the quinces, put them into water as they are cored, to prevent them from blacking; boil them till tender; take their weight in sugar; beat, and break the quinces with the back of a spoon and put in the sugar, and let them boil fast, uncovered, till they slide from the bottom of the pan.

(*f*) **Foreign Pine-apple Marmalade.**—Take the largest, ripest, and most perfect pine-apples imported; pare them, and cut out whatever blemishes are to be found. Weigh each pine-apple, balancing the other scale with an equal weight of the best double-refined sugar, broken into large lumps. The white sugar that is now sold ready-powdered, is generally so much adulterated with finely pulverized starch, as to have very little strength or sweetness, and is, therefore, unfit for sweetmeats, as, when made with it, they will not keep. Grate the pine-apples on a large dish; using a large coarse grater, and omitting the hard core that goes down the centre of each. Put the grated pine-apple and the sugar into a preserving-kettle, mixing them thoroughly. Set it over a moderate and very clear fire, and boil and skim it well, stirring it after skimming. After the scum has ceased to appear, stir the marmalade frequently till it is done, which will generally be in an hour, or an hour and a half after it has come to a boil. But if it is not smooth, clear, and bright in that time, continue the boiling till it is. Put it warm into tumblers, or broad-mouthed glass jars. Lay inside the top of each doubled white tissue-paper, cut exactly to fit, and press it down lightly with the finger round the edge, so as to cover smoothly the surface of the marmalade. Lastly, tie down according to par. 1367, and set them in a cool, dry place. This is a very delicious preparation of pine-apple.

1371. **Receipts for Drying with Sugar:**

(*a*) **To Dry Jargonel Pears.**—Pare them very thin, before they are quite ripe, and simmer in a thin syrup; let them lie a day or two, then make the syrup richer and simmer again. Repeat this till they are clear, then drain, and dry them in the sun or in a cool oven for a short time. They may be kept in the syrup and dried as wanted, which makes them more moist and rich.

Another Way.—Take some fine pears before they are quite ripe, pare them and set them over the fire in cold water. Let them stew till tender; lift them gently out and put them into cold water for a quarter of an hour, then drain on a sieve into a pound of sugar and two quarts of water for every fifty pears; pot the fruit, and let it stand two hours. The pears must then be taken out and suspended in a slow oven, with the large end down, for twelve hours. Clarify the syrup in which the fruit has stood, and boil it; when quite cool, the pears must again remain in the syrup, and be transferred to the oven for the same time as before. Boil the syrup, and continue the process till the pears are perfectly dry.

(*b*) **To Dry Siberian Crabs for Dessert.** Prick the crabs full of holes, fill three or four jars with them, then put them in the oven till tender. Sift a quantity of lump sugar pounded. Dip the crabs in the sugar, lay the stalks upwards on paper, and dry in a very cool oven; dip in the sugar again and again, and dry them between whiles, and afterwards as long as is necessary. They must be laid in the hastener, or some very warm place to dry.

(*c*) **To Dry Cherries with Sugar.**—To every four pounds of fruit stoned, weigh one pound of powdered lump sugar; put the fruit and sugar into a preserving-pan; boil very gently for three-quarters of an hour, then put them by in a basin with their own liquor till cold; drain them from the syrup, and lay them singly to dry on dishes moderately heated; let them remain in the oven till they look dry at the top, then take them out, and in a week turn them on to clean dishes, and put them once more into the oven as above. Take them out and put them into a jar, which must be kept covered as for other preserves.

(*d*) **To Dry Gooseberries.**—To seven pounds of red gooseberries add a pound and a half of powdered sugar, which must be strewed over them in the preserving pan. Let them remain at a good height over a slow fire till they begin to break, then remove them. Repeat this process for two or three days, then take the gooseberries from the syrup and spread them out on sieves near the fire to dry. This syrup may be used for other preserves. When the gooseberries are quite dry, store them in tin boxes or layers of paper.

(*e*) **To Dry Barberries in Bunches.** Have ready bits of flat white wood, three inches long, and a quarter of an inch wide.

Tie the stalks of the fruit on the stick from within an inch of one end to beyond the other, so as to make them look handsome. Simmer them in some syrup two successive days, covering them each time with it when cold. When they look clear, they are simmered enough. The third day, do them like other candied fruit.

1872. RECEIPTS FOR JELLIES:—

(*a*) STRAWBERRY, RASPBERRY, RED CURRANT, OR CURRANT AND RASPBERRY JELLY.—Put the fruit into an earthen pan, squeeze them well with a new wooden spoon; mix an equal weight of sugar in large lumps, with the fruit, and let them infuse for an hour, that the sugar may draw out the juice; next pour on a little water. If the strawberries are too ripe, squeeze in the juice of two lemons; put all this into a jelly-bag nearly new; mix some melted isinglass with the juice, but *the whole must be very cold.* The proportion of isinglass before melting should be at the rate of an ounce to four pounds of fruit.

(*b*) RED OR WHITE CURRANT JELLY, MADE BY BOILING.—When the fruit is quite ripe, gather it on a dry day; as soon as it is nicely picked put it in a jar, and cover it down very close; set the jar in a saucepan about three parts filled with cold water, put it on a gentle fire, and let it simmer for about half an hour; take the pan from the fire and pour the contents of the jar into a jelly-bag; pass the juice through a second time, do not squeeze the bag; to each pint of juice add a pound and a half of good lump sugar in large lumps; when it is dissolved, put it into a preserving-pan, set it on the fire, and boil gently, stirring and skimming it the whole time till no more scum rises, *i.e.*, about twenty minutes, it will then be perfectly clear and fine; pour while warm into pots, and, when cold, cover them with paper wetted in brandy, and tie down as in par. 1867.

(*c*) BLACK CURRANT JELLY.—Boil the fruit till the juice flows, then strain it through a jelly-bag, and set it again over the fire for twenty minutes; after which add half a pound of sugar for each pound of juice, and boil the whole ten minutes longer.

(*d*) GOOSEBERRY JELLY.—Take fine gooseberries, not too ripe, of any colour; wash and drain them, and add a pint and a half of cold water to every quart of gooseberries. Place them over the fire, and boil till the whole becomes a jam, then strain it well through a jelly-bag. Make a rich syrup, in the proportion of a pound of loaf sugar to a pint of the liquor, with a little water in which the remains of the strained fruit have been boiled. When the syrup is sufficiently boiled, add it to the juice and boil them together for a quarter of an hour, then pour off.

(*e*) RASPBERRY JELLY.—Take fresh, nicely-picked raspberries, and simmer over the fire till the juice flows, then strain, and weigh the juice, but boil it for ten minutes before adding the sugar, which must be in the proportion of one pound and a quarter to one pound of juice; boil five minutes longer, skim it, and pour into pots. This is a good jelly for flavouring creams, and requires no sugar to be added for that purpose.

(*f*) BLACKBERRY JELLY.—This preparation of the blackberry is more agreeable than the jam, as the seeds, though very wholesome, are not agreeable to all. It is made in the same way as currant jelly (see *b*); but the fruit is so sweet that it only requires half the weight of the juice in sugar.

(*g*) PLUM JELLY.—Take only those plums which are perfectly sound; remove the stalks, and put them into large stone jars; if damsons, make an incision in each; cover the jars with bladder, put them in deep pans of water over the fire, and let the water boil gently for three or four hours, till all the juice has come from the fruit; then strain through a jelly-bag, and boil with an equal weight of lump sugar (as at *d*), taking care to stir it constantly.

(*h*) ORANGE JELLY.—Strain the juice from two dozen China oranges over the grated rind of one, and add the juice of four Seville oranges. Strain the juice through a jelly-bag, and add the proportion of one pound of lump sugar to one pint of juice. Set it over the fire and let it boil for twenty minutes. Then boil a quarter of a pound of isinglass in half a pint of water with the rind of a lemon, till the isinglass is dissolved. Add a spoonful at a time to the juice as it boils till you perceive it stiffen, then pour into pots. There is so little gelatinous quality in the juice of the orange, that it must be aided by the isinglass to form the jelly.

(*i*) FOUR-FRUIT JELLY.—Take equal quantities of ripe strawberries, raspberries, currants, and red cherries. All should be fully ripe, and the cherries must be stoned, taking care to save the juice that comes from them in stoning. Add it afterwards to the rest. Mix the fruit together, and put it in a linen bag. Squeeze it well into a tureen placed beneath. When it has ceased to drip, measure the juice; and to every pint, allow a pound and two ounces of the best double-refined loaf sugar, in large lumps. Mix together the juice and the sugar; put them into an enamelled preserving-pan; set it over the fire, and let it boil half an hour—skimming it frequently. Try the jelly by dipping out a spoonful, and holding it in the open air. If it congeals readily, it is sufficiently done. Put the jelly warm into wide-topped glasses. Cover it with double tissue paper, which must be white, and cut exactly to fit the surface of the jelly. Lay it nicely and smoothly inside the top of the glass, pressing it down with the fingers all round the edge. Then tie down with the white-of-egg paper, as at par. 1367 *b*.

(*j*) MEDLAR JELLY.—Take medlars when they are quite ripe, wash them and put them into a preserving-pan with as much water as will cover them; let them simmer slowly till they become quite a pulp, then strain through a jelly-bag, and to every pint of liquor add three-quarters of a pound of loaf sugar; boil it an hour, or till it is quite clear, and put it into preserving pots or moulds.

(*k*) APPLE JELLY.—Take codlin, or other light-coloured apples, pare and cut them in thin slices into a deep saucepan, with as much water as will just cover them; boil to a pulp, and strain through a jelly-bag; weigh, and to every pound of liquor add a pound of lump sugar powdered. Boil till it comes to the top of the pan for a quarter of an hour, or rather more; put it into teacups or moulds. The juice of a large lemon to every pound of sugar is an improvement; and the sugar should be made hot before it is added to the juice.

1373. RECEIPTS FOR SYRUPS:—

(*a*) SYRUP OF LEMONS.—Clarify three pounds of lump sugar (see Sect. 11, Sub-sect. A); then pour into the syrup while at weak candy height, and boiling, the juice of eighteen good lemons and the peel of three grated. Let it boil together for three minutes, strain it through a lawn sieve, and bottle it. When cold, cork it down tight, to keep for use. This syrup is ready for lemonade, punch, ices, jellies, &c., without any trouble.

(*b*) SYRUP OF ORANGES is made exactly in the same way, substituting oranges for lemons.

(*c*) ECONOMICAL SYRUP OF ORANGES OR LEMONS.—A clarified syrup of these fruits may be made with the *white* peel of oranges or lemons after the outside rind has been removed, which always leaves behind a considerable quantity of the essential oil and bitter principle.

(*d*) SYRUP OF MULBERRIES, CURRANTS, STRAWBERRIES, or RASPBERRIES is made in the same way as for jelly (par. 1372), with the addition of a quarter of a pint of water to each pound of fruit, added to the sugar and made into a syrup. The fruit is first boiled and strained, after which it is boiled up for ten minutes with the syrup, and poured while warm into narrow-necked bottles, which are to be corked, and kept in a cool place.

(*e*) APPLE, PEAR, OR PINE-APPLE SYRUP may be made by boiling in clarified syrup an equal quantity of either fruit, cut in small squares, but not washed or broken. The syrup extracts the flavour, and may be poured off, leaving the apples, &c., which may afterwards be used as a common preserve.

SUB-SECT. B.—BOTTLING.

1374. REMARKS.—There are now several methods adopted for preserving fruits, ripe and unripe, without any, or, at all events, the usual proportions of, sugar. They all depend upon the exclusion of the air, and the several methods are directed to that end. Much depends upon the place where they are kept; and if this is not dark, cool, and dry, it is far better to bury them in garden mould, or sand if at hand, at least a foot beneath the surface, and head downwards, and then to dig them up when wanted. If this plan is adopted, the place should be protected from much rain, as, for instance, beneath an evergreen, or some similar place. By burning the match in the mouth of the bottle, atmospheric air is excluded for the moment, and sulphurous acid gas substituted for it, which is quickly condensed, and causes a slight tendency to a vacuum. The bladder used for this purpose should be soaked in water for forty-eight hours.

1375. The following is an excellent method of BOTTLING ANY ORDINARY FRUITS:—

(*a*) Take three pounds of fruit, boil ten minutes; add one pound of sugar, and boil ten minutes longer; burn a sulphur match in the bottle; put the fruit *quickly in while hot;* then *immediately* tie on a piece of well-soaked bladder, smooth side outwards. It is better kept in a dark, cool, dry place.

(*b*) TO PRESERVE FRUIT FOR TARTS, OR FAMILY DESSERTS.—Cherries, plums of all sorts, and American apples, gather when ripe, and lay them in small jars that will hold a pound; strew over each jar six ounces of good loaf sugar, pounded; cover with two bladders each, separately tied down; then set the jars in a large stewpan of water up to the neck, and let it boil three hours gently. Keep these and all other sorts of fruit free from damp.

(*c*) TO BOTTLE RHUBARB.—Cut the rhubarb as for tarts; fill the bottles to the neck, then put in as much water as they will hold. Cork and tie them over with a double bladder, and let them remain in a cool oven till the rhubarb just cracks.

(*d*) TO BOTTLE BLACK CURRANTS.—Top

and tail the currants, and when the bottles are filled, add one table-spoonful of gin. Keep in a cool and dry place, and either resin the corks or tie them over with bladders.

(*e*) TO BOTTLE PLUMS OR ANY FRUIT FOR TARTS.—Fill wide-mouthed bottles with the fruit and as much cold water as they will hold, and cover them with bladder; then put them into a kettle of *cold* water, first wrapping the bottles with cloths or hay-bands to prevent their touching; let them get quite hot, but not boil; leave the bottles in the water until it is quite cold again; they should be kept in a dry place. And when the above directions are attended to, the result will be far superior to any other method of bottling fruit, especially with stone-fruit, as plums, damsons, green-gages, &c.

SUB-SECT. C.—PRESERVING IN SPIRIT OR WINE.

1376. Very little preparation is required for this kind of preserve, the fruit being merely covered with the spirit or wine, with or without sugar. It must, however, be carefully corked and tied down with bladder, or the spirit will evaporate.

(*a*) TO PRESERVE APRICOTS, PEACHES, AND GREENGAGES IN BRANDY.—The fruit must be gathered at its full size, but not too ripe; wipe the fruit, and prick it full of holes with a fine needle; to two pounds of fruit put one pound of double refined sugar and three pints of water; when it boils put in the fruit, and boil it gently till tender, keeping the fruit under water; cover it close in the same pan one night, just give it a boil up next day, and lay the fruit on a dish to drain from the syrup; boil the syrup nearly half an hour, when almost cold put the fruit in glass jars. To one cup of syrup add one of brandy till full.

(*b*) BRANDIED CHERRIES.—Weigh the finest morellas, having cut off half the stalk, prick them with a new needle, and drop them into a jar or a wide-mouthed bottle; pound three-quarters of their weight of sugar or white candy; strew over, fill up with brandy, and tie a bladder over.

(*c*) TO PRESERVE STRAWBERRIES IN WINE.—Put a quantity of the finest large strawberries into a gooseberry bottle, and strew in three large spoonfuls of fine sugar; fill up with Madeira wine, or fine sherry.

(*d*) BRANDY GRAPES.—For this purpose the grapes should be in large close bunches, and quite ripe. Remove every grape that is the least shrivelled, or in any way defective; with a needle prick each grape in three places; have ready a sufficiency of double-refined loaf sugar, powdered and sifted; put some of the sugar into the bottom of the jars, then put in a bunch of grapes and cover all thickly with sugar, then another bunch, then more sugar, and so on till the jar is nearly full, finishing with a layer of sugar; then fill up to the top with the best white brandy; cover the jars as closely as possible, and set them away; they must not go over the fire; the grapes should be of the best quality, either white or purple.

SUB-SECT. D.—PRESERVING IN ICE.

1377. ICE is the most useful of all the means of preserving meats and fish in a fresh state, with or without the aid of salt. In the sub-section treating of salting, it will be observed that ice aids that process in a remarkable manner when conducted in warm weather. At present we have to consider ice as a means of keeping fish, creams, &c., in a fresh state.

1378. THE ICE to be used for the purpose must either be obtained in the winter and preserved in an ice-house (for the proper construction of which see page 157), or it must be purchased as it is wanted. Most pastrycooks in the country have an ice-house, and retail coarse and dirty ice, which serves tolerably well to freeze creams, &c., but not for actually putting into beverages, such as are mentioned at page 391. For this purpose the ice imported by the Wenham Lake Company should be used (whose London offices are at 164, Strand); and, indeed, for all purposes it is now very generally adopted. It may not generally be known, that ice is not all of the same temperature; some is only just below 32 degrees, and such an article rapidly thaws on the slightest increase of heat, and it also goes a very little way in freezing other mixtures when in contact with it. But the Wenham Lake ice is obtained from a source where the ice is frozen at a very low temperature indeed, and much of it will indicate as low a scale as 12 or 15 degrees of Fahrenheit. When this is really the case it is better worth 4d. per pound than ice at 32 degrees is 2d., because it will go more than twice as far.

THE PRICE OF THIS ICE IS AS FOLLOWS:—

	s.	d.
In quantities of 100 lb. and upwards, per 100 lb.	7	0
For 25 lb.	2	0
Less than 25 lb., per lb.	0	2

The company's vans deliver their ice in London, or it is forwarded to the country by the ordinary conveyances, packed in a mat or blanket for 2s. extra, without perceptible waste.

1379. In order to keep this ice for some days, the company sell a *Refrigerator*, or portable ice-chest, which is a very efficient instrument, though not, perhaps, quite coming up to the description given by its proprietors. By its aid those who have not ice-houses may be supplied with ice in London at sums varying, according to the quantity, from 4s. to 10s. 6d. per week. *Fig.* 108, shows a sketch of the Refrigerator, with its sliding and perforated shelves for cooling and preserving wines, fruits, and provisions, without permitting them to come into contact one with the other. (A) and (B) are the two lids of the Refrigerator; (A) when closed renders the interior air-tight, and being constructed like the sides and bottom, with a substance impervious to caloric, surrounds the ice and all the contents of the Refrigerator with a non-conducting medium, and speedily reduces everything so enclosed to an uniform temperature very little above the freezing-point. (B) is the exterior lid forming part of the chest which encloses the non-conducting and ice-preserving portion of the Refrigerator, making the whole into a handsome piece of furniture. These exterior chests are made of any material or size, and in any style, for the pantry, the hall, or the dining-room. For icing wines, the Refrigerators possess *peculiar advantages;* the temperature to be imparted to wine can be regulated at pleasure, and if more wine be iced at any time than is required for the particular occasion, it is neither wasted nor injured, as it can be left for any period in the Refrigerator without deterioration. To ice wine it is necessary merely to place it in the Refrigerator; and the temperature can be regulated by the length of time during which it is suffered to remain, and by placing it in direct contact with the ice or otherwise. By its aid also a small quantity of ice is made to serve as a supply for many days; and butter, creams, jellies, fruit, game, and provisions of every kind, are preserved and kept *deliciously cool* for any length of time.

PRIÇE OF REFRIGERATORS AND ICE REQUIRED.

No.	EXTERIOR DIMENSIONS.	PLAIN. £	s.	d.	ENAMELLED. £	s.	d.
I.	2 ft. 2 in. long, 2 ft. wide, 2 ft. 4 in. high	4	10	0	5	0	0
II.	3 ft. 3 in. long, 2 ft. 2 in. wide, 2 ft. 7 in. high	6	6	0	7	0	0
III.	3 ft. 5 in. long, 2 ft. 5 in. wide, 2 ft. 8 in. high	7	7	0	8	8	0
IV.	4 ft. long, 2 ft. 8 in. wide, 3 ft. 2 in. high	10	10	0	12	0	0

Packing for the Country, 3s. 6d. each.

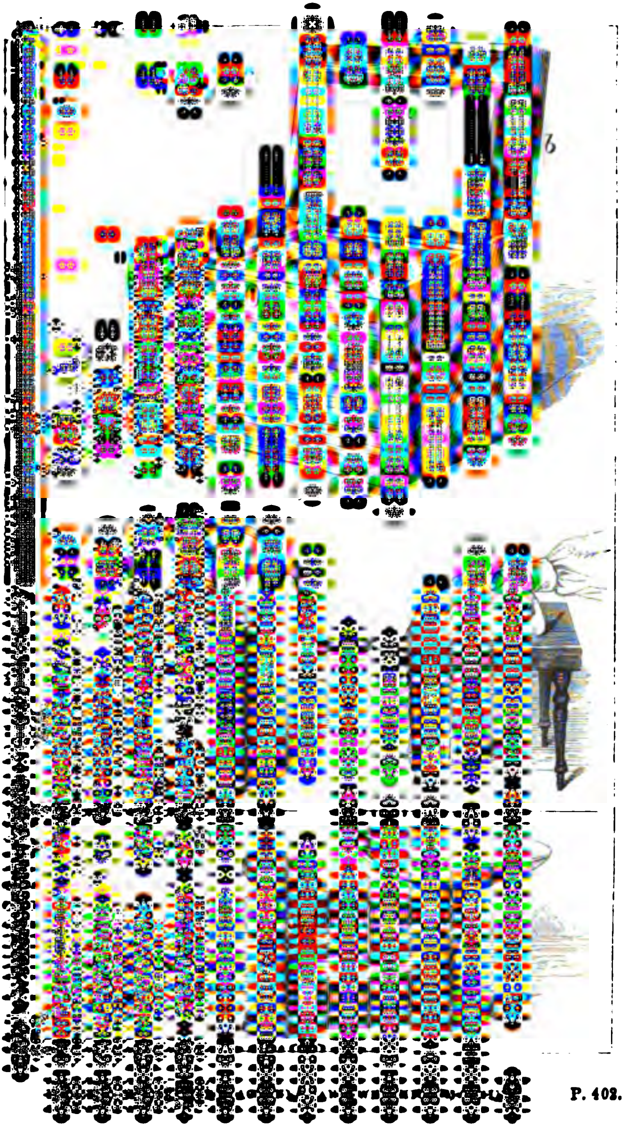
Supply of Ice for No. I., 50 lb. weekly; No. II., 75 lb. to 100 lb. weekly; No. III., 100 lb. weekly; No. IV., 150 lb. weekly.

1380. A MACHINE FOR MAKING ICE-CREAMS is also sold by the same company, adapted for private families; it certainly answers the purpose remarkably well, but so in fact do the ordinary ice-pails of the confectioners. For those who like their ice frozen very hard, this pail is, however, far superior to any other. The object of the stirring, or rotatory motion, communicated to the mixture, is to prevent the outside from being frozen more than the inside, and to keep all of a consistence half-way between snow and ice, which is the object of all ice-cream machines. The price of that sold by the Wenham Lake Ice Company is £3 10s. (see *fig.* 108 c).

1381. THE FOLLOWING ARE THE DIRECTIONS FOR USE.—Having prepared the water or cream mixture, put it into the freezing-pot, and adjust the apparatus; then fill the pail with ice broken up sufficiently small to be freely admitted into the pail round the freezing-pot; but to every 3-inch layer of ice, add a layer of salt, using about a quarter as much salt as ice. Press these down with a stick with one hand, at the same time turning the machine with the other, without stopping, for about eight or ten minutes, or until the contents are sufficiently frozen, which will be known by a difficulty in turning the handle, then let the frozen cream remain a few minutes without stirring, and it will be fit for table; but if required to be kept long before use, the wooden plug should be taken out of the pail, and the water let off; then put the plug in again, and refill the pail with ice and salt as before, but use only half the quantity of salt (see *fig.* 108 c).

(a) TO MOULD ICES.—Fill the mould as quickly as possible with the frozen cream, shut it up, bury it in ice and salt, and let it remain an hour or more; for dishing, have the dish ready, dip the mould in cold water for about one minute, wipe it, take off the top and bottom covers, and turn it into the dish; this must be done expeditiously.

(b) TO MAKE RASPBERRY OR STRAWBERRY ICE-CREAM.—To one pound of raspberry or strawberry jam, add the juice of one or two lemons, half a pint of cream, and a pint and a half of new milk; colour with a few drops



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of tincture of cochineal, and freeze. If raspberries or strawberries are in season, it may be made with the pulp of two pounds of either, or of the latter added to a quarter of a pound of red currants, with three-quarters of a pound of sugar, a pint of cream, and one quart of milk.

(*c*) To **Make Three Pints of Lemon-water Ice.**—Take six lemons, four oranges, two pints of water, fourteen ounces of sugar; mix, and freeze.

(*d*) **Iced Jelly.**—Make calves' feet jelly in the usual way; then put it into a freezer and freeze it as you would ice cream; serve it up in a glass bowl or in jelly-glasses; you cannot mould it in this way, but the taste of jelly when broken up is much more lively than when moulded; also, it sparkles and looks handsomer.

(*e*) **Currant Water Ice.**—Pick a sufficiency of ripe currants from their stems; then squeeze the currants through a linen bag, and to each quart of the juice allow a pound of powdered loaf sugar; mix them together, and when the sugar is thoroughly melted put it into a freezer and freeze it in the manner of ice-cream; serve it up in glass bowls; it will be found delicious in warm weather.

(*f*) **Plum-water Ice.**—Take some fine ripe plums; wash them, cut them in half, and stone them; crack the stones, and take out the kernels; weigh the plums, and to every pound allow a pound and a half of loaf sugar, and the white of an egg beaten to a stiff froth; mix, in a preserving kettle, the white of egg with the sugar, which should be finely powdered, and allow to each pound and a half of sugar half a pint of water; having stirred it well set on the fire (but not till all the sugar is melted), add the plum kernels, and boil and skim it; when the scum ceases to rise, take the syrup off the fire, pour it into a white-ware vessel, and remove the kernels; while you are boiling the sugar put the plums into another vessel, and boil them by themselves to draw out the juice; then put them into a linen bag, and squeeze all the juice into a deep pan or pitcher placed beneath; afterwards mix the plum-juice with the syrup, stirring them thoroughly together, and put it into a freezer; freeze it well, and when done serve it in a glass bowl, and eat it in saucers.

(*g*) **Damson-water Ice** may be made as above, except that you boil the damsons whole and make no use of the kernels. When the damsons have all burst open, put them into a linen bag; squeeze it well, mixing the juice with an equal quantity of syrup previously prepared, and then freeze it. The juice of damsons is much thicker and richer than that of plums, but it requires still more sugar.

(*h*) **Cherry-water Ice** is made nearly as above, except that the cherries must be stoned, but not boiled. Put them raw into the bag, and squeeze them. The cherries should be of the best and most juicy red sort, and thoroughly ripe.

(*i*) **Strawberry Water Ice** is made of ripe strawberries put into a linen bag, and the juice squeezed out. Then measure it, and to each pint of juice allow half a pound of finely-powdered loaf sugar. Having mixed thoroughly the juice and sugar, put it into a freezer and freeze it. In this manner ices, without cream, may be made of currant and raspberry juice, mixed raw with sugar.

(*j*) **Gooseberry-water Ice.** — Having stewed the gooseberries, squeeze out the juice through a linen bag. To every pint allow a pound of loaf sugar. Mix it well, and freeze it.

1382. **An Ice-plane**, for reducing ice to thin layers for mixture with various beverages, is likewise sold (see fig. 108 D); also moulds, freezers, and breakers, according to pattern and size.

1383. **In Proceeding to Preserve Animal Substances**, such as game or fish, by means of ice, it is only necessary to bring them into contact with it, or at least into close proximity. Thus, game may be packed in hampers with bladders of pounded ice intermixed, or blocks of lump ice covered with any impervious substances, such as oil-silk. In this way, ptarmigan are sent from Norway, in cases which are sometimes nearly a month in their transit, but without any putrefaction going on. For fish the ice requires no waterproof protection, and they may be packed in it to great advantage. Indeed, were it not for the anti-putrefactive powers of ice, the trade in fish would be diminished to a very small amount of what it now is.

1384. **Freezing Mixtures**, as substitutes for ice, are sometimes used; but while the latter can be obtained at little more than one penny per pound on the small scale, and at less than that price by wholesale, in point of economy it will supersede all other methods of reducing the temperature. The mixture here given will be found the best for the purpose:—

Muriate of ammonia	...	5 oz.
Nitre	...	5 „
Sulphate of soda	...	8 „
Water	...	16 „

Mix the salts previously powdered with the water, and immerse in them the vessel containing the substance to be frozen. The mixture falls in temperature from 50 degrees to 4 degrees Fahrenheit; but, as already observed, the cost is greater than by means of ice. The quantity here specified will not freeze more than six or eight ounces of cream, and costs about 1s. 4d., for which sum sixteen pounds of ice may be purchased, or enough to freeze more than five pounds of cream, when mixed with a proper quantity of common salt, at a cost of a halfpenny. It is manifest, therefore, that except in an emergency, when ice cannot be procured, this freezing mixture is not to be considered advantageous in any point of view.

SUB-SECT. E.—SALTING.

1385. SALTING, sometimes called pickling, is the preservation of otherwise destructible articles by means of common salt. Other substances are likewise used as adjuncts, but the main reliance is placed upon the above-named salt. These consist of *nitre*, *sugar*, or *treacle*, *spices*, and sometimes *pyroligneous acid*, *charcoal*, or *ice*. Bay salt is only a variety of common salt obtained by evaporating sea water, and is therefore not enumerated in the above list.

1386. SALT, whether in substance or in solution, prevents the decomposition of animal substances at a temperature below 60 or 65 degrees; but above that heat it loses its effect, and the tendency to putrefaction is very little controlled by it. Salt does not change the colour of flesh to any great extent, but makes it more pale by the discharge of the blood which it contains. In using salt the great point is to cause it to enter the interior, and to take care that the article to be salted is not raised in temperature above 55 or 60 degrees.

1387. NITRE has a similar effect to common salt, but it hardens the fibre more, and reddens it very considerably.

1388. SUGAR seems to act by virtue of its large proportion of carbon, and this last by its power of absorbing oxygen, which is the great promoter of decomposition.

1389. ICE, when added to saline solutions, in salting, has a wonderfully useful effect, by lowering the temperature sufficiently to prevent decomposition from going on. With the aid of this material, in the height of summer, any meats may be salted with perfect safety, by adding ice enough to the brine or pickle to keep *the whole* between 55 degrees and 32 degrees—below which it should never be allowed to fall.

1390. MEAT is either salted by rubbing on the saline ingredients in a powdered condition, using the hand, and especially the ends of the fingers; or else the meat is dipped in a solution, which is either salt and water, called *pickle*, or else the juices brought out from previous saltings, and called *brine*. Meat, when covered with salt, will soon absorb large quantities of it, while, at the same time, it gives out its watery particles; and in this way it is often preserved, taking care to turn it daily, which should always be done in every case of preservation with this material.

1391. PLAIN SALTING, that is, without any addition to common salt, is adopted for meats which are to be dressed in about six or seven days, as a leg of pork, a round of beef, &c. A *leg of pork* should be merely rubbed over with salt, and the liquor allowed to run out, turning the leg daily, and rubbing the salt well into the cut surface, particularly round the bone and into the clefts of the flesh and fat. According to the taste for salt, it should be dressed after five to nine days' salting. *Boiling beef* is cured in the same way, but most people like the addition of a little saltpetre, in the proportion of about one-eighth.

1392. THE SALTING OR PICKLING RECEIPTS are as follows:—

(*a*) TO CURE BACON AS IN WILTSHIRE.—Sprinkle each flitch with salt, and let the blood drain off for twenty-four hours; then mix a pound and a half of coarse sugar, the same quantity of bay-salt, not quite so much as half a pound of saltpetre, and a pound of common salt, and rub this well on the bacon, turning it every day for a month; then hang it to dry, and afterwards smoke it ten days. This quantity of salts is sufficient for the whole hog.

(*b*) TO MAKE A PICKLE THAT WILL KEEP FOR YEARS, FOR HAMS, TONGUES, OR BEEF, IF BOILED AND SKIMMED BETWEEN EACH PARCEL OF THEM.—To two gallons of spring water put two pounds of coarse sugar, two pounds of bay and two pounds and a half of common salt, and half a pound of saltpetre, in a deep earthen glazed pan that will hold four gallons, and with a cover that will fit close. Keep the beef or hams as long as they will bear, before you put them into the pickle; and sprinkle them with coarse sugar in a pan, from which they must drain. Rub the hams, &c., well with the pickle, and pack them in close; putting as much as the pan will hold, so that the pickle may cover them. The pickle is not to be boiled at first. A small ham may lie fourteen days, a large one three weeks; a tongue twelve days, and beef in proportion to its size. They will eat well out of the pickle without drying. When they are to be dried, let each piece be drained over the pan; and when it will drop no longer, take a clean sponge and dry it thoroughly. Six or eight hours will smoke them, and there should be only a little sawdust and wet straw burnt to do this; but if put into a baker's chimney, sew them in coarse cloth, and hang them a week.

(*c*) To **Salt Flat Ribs of Beef.**—Two ounces of saltpetre, a quarter of a pound of treacle, two ounces of powdered allspice, and a sufficient quantity of common salt, to be well rubbed and turned every day for about ten days. It should be put into cold water, and boiled till the bones will slip out easily; then pressed by a weight till cold, when the outside skin should be taken off, or the meat will look black. If preferred, it may be rolled round and pressed.

(*d*) To **Cure a Round of Beef Red.**—To a round of beef of about thirty pounds, use a quarter of a pound of saltpetre, one pound of sugar, two pounds of common salt; rub half of these ingredients well into the beef; the other half, boil in four quarts of water, and pour hot over it; rub and turn it in the pickle every day for three weeks; then take it out and make it up into a nice round; put a quart of water into a dish with it, cover the top well, and bake it twelve hours in a slow oven.

(*e*) **Ham, Tongue, or Meat Pickle.**—One pound of coarse moist sugar, one pound of bay-salt, one pound and a half of common salt, a quarter of a pound of saltpetre, two ounces of sal prunella, and one gallon of soft water; mix all well together, and keep it stirred frequently. A tongue will be ready in a fortnight, or a ham in three weeks or a month.

(*f*) To **Cure Hams or Tongues with a Full Flavour.**—Mix together in a powder half a pound of saltpetre, a quarter of a pound of sal prunella, two ounces of black pepper, and one ounce of pimento; this quantity will be sufficient to use with about six or seven pounds of salt, and two pounds of treacle. Do not make a pickle in the first instance, but put a ham or two in a pan, cover them with salt and a proportion of the above mixture (about one-eighth), pouring over some treacle; repeat this two or three times as it may dissolve. A pickle will thus be formed so that the subsequent ones will require less salt, &c. A ham of twelve or fourteen pounds will take about a fortnight, and a larger one about an extra day to every pound, rather more than less, particularly for the first.

Another Way.—To each ham of twenty pounds put one pound of bay-salt, half a pound of common salt, two ounces of saltpetre, and one ounce of black pepper; blend all together, and rub the ham with it every day; in three days pour one pound and a half of treacle upon it. Continue to turn and rub it every other day for three weeks or a month. Then take it out of the pickle and put it into cold water for twenty-four hours, let it drain a day or two, then dust it with flour, and hang it in the kitchen to dry. (Some prefer to hang it to dry without soaking it in water.) When it is to be cooked, put it into boiling water.

(*g*) To **Cure Westphalia Hams.**—To a ham of twelve or fourteen pounds put as much common salt as will keep it, and not more, two ounces of bay-salt, one ounce of saltpetre, and a quarter of a pound of coarse sugar; let it lie twenty-four hours, and then add a half-pint of vinegar, a large handful of bay-leaves, thyme, red sage, and sweet marjoram, all chopped small together and put into the vinegar with a tablespoonful of Cayenne pepper; let it lie three weeks or a month, according to the size of the ham, basting it continually with the liquor and turning it every day.

(*h*) To **Make Imitation Brawn.**—Take the upper jaw, the feet, the ears, and the hocks of a pig; put to them half an ounce of saltpetre and a little common salt, and let them lie a week; then boil them till they are very tender, with five cow-heels (already boiled till perfectly tender, and the bones carefully extracted) and an ox tongue; lay it in a round tin, and put a weight upon it; let it stand till quite cold; be particularly careful to take out the bones, and put the sword on the outside. To make a pickle to keep it in, boil one gallon of water, one quart of wheat bran, and one pound of salt an hour; strain and let it stand till cold; make a fresh pickle every fortnight.

(*i*) **Spiced Beef.**—Procure the silver-side of a round of beef, and pickle as for ham (see *e*), letting it lie for about a fortnight or three weeks. A few days before taking it out, add a piece of fat. Let it drain twenty-four hours, then make three or four holes through it with a strong pointed wooden pin, about an inch in diameter, passing from one cut surface to the other. Next fill these holes with the following stuffing, driving it in with great force, and using the flat end of the pin:—Suet, half a pound; ground pimento, one ounce; and a bunch of knotted marjoram, well chopped and mixed together. The great art is in well cramming these holes, which take an enormous quantity when properly filled. Lastly, skewer the fat in the inside of the lean, and roll it tightly in strong brown paper, tying it up with string. Place it on a trivet in a baking dish, and bake thoroughly in a very slow oven. This is an excellent dish for breakfast or luncheon.

(*j*) **Pickled Oysters.**—Lay the oysters on a sieve to drain the liquor from them; leave it to settle, then pour off the clear portion, and boil it up well with pepper, salt, mace, and ginger to the taste; then wash the oysters well in several waters to remove all the slime, and give them one boil up in the liquor.

1393. To Smoke Hams or Tongues, they should be submitted to the smoke from broom-tops, or oak-sawdust, in a close chamber, or suspended in the chimney of a farm-house where wood is burnt for a few days. Bacon-dealers profess to smoke in the former mode for their customers, but they generally have recourse to the following plan, which costs much less money and little or no trouble, while it gives the bacon a very rich colour, and pleases the eye, if not the palate:—

1394. To Imitate the Flavour of Smoking, take the *brown* pyroligneous acid, and with a strong paint-brush rub it over the whole two or three times, according to the degree of flavour desired. This answers remarkably well for broiled bacon or ham, but when soaked or boiled the acid is partially removed, and with it the flavour is in great measure lost. The same process answers equally well for dried fish, making it taste as if kippered.

1395. To Keep Hams, Tongues, &c.—The best method is to brush over the whole of the cut parts with a paste made of quick-lime and water, which will effectually keep out the flies; but it will not readily wash off before dressing, and therefore there is some little waste. Next to this, and without the above objection, is the plan of sewing up the hams, &c., in canvass cloths, by which the flies are wholly prevented from reaching the meat. In any case the bacon or ham should be hung in a dry but cool room, away from the kitchen fire, which soon makes the fat rancid. There should be a thorough ventilation, without draught. Where there is no convenience for hanging, the bacon should be laid in wood-ashes, enough of these being introduced to fill up all the vacant space.

Sub-sect. F.—Pickling in Vinegar.

1396. Remarks.—This sub-section comprises those vegetables which are preserved in vinegar, to be eaten with savoury meats, or used as additions to such dishes. Also sauces of a similar character, in which the vegetable compounds are dissolved in vinegar. Besides which will be found the modes of preparing other flavouring compounds which are required for general use. All pickles which are to be green must be done in the following manner: lay them in a preserving-pan, with layers of vine leaves between; then cover them with vinegar, and let them remain on the fire until quite green, but do not allow them to boil.

1397. Pickles are prepared from vegetables, fresh, salted, or dried, and mixed with vinegar, which should be of the best common kind or distilled (see par. 994). The safest vessels to use for boiling vinegar are those of enamelled iron; a slight oxidation may arise from the action of the vinegar upon an iron vessel, but not sufficient to be dangerous. Acetic acid dissolves the lead that is used in the tinning of saucepans. Pickles should never be put into glazed jars, as salt and vinegar dissolve the glaze, which is poisonous. The jars in which they are kept should either be of stone or glass. They should be closely covered, and have a wooden spoon, with holes, to take them out of the jar; all metals being improper. They should be well kept from the air, and the large jars should be seldom opened, and the top closely covered. Those pickles in common use for the table are best kept in the ground-glass stoppered pickle-jars, which retain the vinegar without difficulty. It is necessary that the pickles should always be entirely covered with the vinegar; examine them frequently, and if any symptoms of mould appear, remove the part affected and boil the vinegar again with additional spices. When vinegar is added to old pickles, boil it, but let it stand to be cool before it is poured over. When first pickles are made, the vinegar should be put over them boiling. Of all pickles, perhaps, red cabbage is the most wholesome; it is frequently made of unboiled vinegar, merely poured over the cabbage which has previously been salted.

1398. Vinegar Pickles:—

(*a*) To Pickle Nasturtiums, to be used instead of Capers.—Boil some very good vinegar with some mace, white peppercorns, and a little salt. Put it into a jar, and when cold, put in the nasturtiums as soon as gathered. Keep them closely tied down, and they will be very green and crisp.

(*b*) Pickled Beetroot.—Boil some beetroots tender, and pare and slice them; then boil as much vinegar as will cover them, with some mace, cloves, and peppercorns. Pour this over when boiling, and cover it close.

(*c*) To Pickle French Beans.—Put the beans in salt and water two days; drain and dry them; then pour boiling vinegar over, letting it stand three days. Pour the vinegar off, and repeat the boiling, letting it stand on the beans for three days more; then boil all together.

(*d*) To Pickle Gherkin Cucumbers.—Pick the roughest, and make a strong brine of salt and water scalding hot; put them in, and cover them close. Let them stand twelve hours; then take boiling distilled vinegar, and put them in it; let them simmer, not boil, for half an hour; then put them in a pan, and keep them *close* covered with vine-leaves, and a cloth at the top. Should they not become sufficiently green, change the vine-leaves, and heat the vinegar again; repeat this till they are so.

(*e*) To PICKLE LEMONS.—Scrape twelve lemons with a piece of broken glass; cut them across in quarters, not quite through. Give them as much salt as they will hold, also rub and strew it over them, and let them lie in an earthen dish three or four days, turning them every day. Then take twelve cloves of garlic, parboiled and salted three days, a large spoonful of flour of mustard, and some Cayenne pepper, to every lemon. Take the lemons out of the salt, and put them in a jar with the spice, covering them with the best vinegar. Keep them very close, and they will be fit for use in a month.

(*f*) To PICKLE MUSHROOMS BROWN.—Take a quart of large mushroom buttons, wash them in vinegar with a flannel, take three anchovies and chop them small, a few blades of mace, a little pepper and ginger, a spoonful of salt, and three cloves of shalots. Put them into a saucepan with as much vinegar as will half cover them, then set them on the fire, and let them stew till they shrink pretty much; when cold put them into bottles with the vinegar poured over them, cork and tie them close up; this pickle will make a great addition to brown sauces.

(*g*) To PICKLE MUSHROOMS WHITE.—Put them into equal quantities of cold milk and water, and rub them with a flannel; have ready hot milk and water, and boil them in it a few minutes, take them out with an egg-slice, and put them into a jar with a little salt, cover them close up with a cloth, let them stand till next day, then boil up the vinegar and pour over them.

(*h*) To PICKLE WALNUTS.—Lay one hundred walnuts in salt and water for six days, changing the water once; put them dry into a jar with a quarter of a pound of bay salt, a quarter of a pound of ginger, a quarter of a pound of black peppercorns, half a pound of shalots, half a pound of mustard-seed, half an ounce of cloves, half an ounce of mace, two sticks of horse-radish, and one pound of anchovies. Boil one gallon of the strongest pickling vinegar, and pour over them hot. Cover them with a pewter plate till cold, then add to them a bottle of port wine, and tie them down close. The jar should not be opened for two or three months. (The anchovies and wine may be omitted, if too expensive.)

(*i*) PICKLED ONIONS.—In the month of September, choose the small white round onions, take off the brown skin, have a stewpan of boiling water ready, and then throw in as many onions as will cover the top; as soon as they look clear on the outside, take them up as quick as possible with a slice, and lay them on a clean cloth, cover them close with another, and scald some more, and so on. Let them lie to be cold, then put them in a jar, or glass, or wide-mouthed bottle, and pour over them the best white pickling vinegar, just hot, but not boiling. When cold cover them; should the outer skin shrivel, peel it off. They must look quite clear.

(*j*) To PICKLE SPANISH ONIONS.—Let the onions remain twelve hours in salt and water; boil white vinegar with capsicums, cloves, whole pepper, and allspice; let it remain till cold, then drain the onions well, put them in jars, and pour the pickle over them.

(*k*) To PICKLE RED CABBAGE.—Slice it into a colander, and sprinkle each layer with salt; let it drain two days, then put it into a jar, with boiling vinegar enough to cover it, and put a few slices of beetroot. Observe to choose the purple-red cabbage. Those who like the flavour of spice will boil some peppercorns, mustard-seed, or other spice, *whole*, with the vinegar. Cauliflowers cut in branches, and thrown in after being salted, will look of a beautiful red.

(*l*) FOR MIXED PICKLES, prepare any vegetables you like by cutting them in pieces, and let them lie in salt and water for two or three days; then make the pickle in the following manner:—Boil the quantity of vinegar required with peppercorns, mustard-seed, a small quantity of mace, a few Cayenne pods and ginger, and half a pound of flour of mustard mixed smoothly in a basin, to be put in while boiling; put all together in a large stone jar.

(*m*) PICKLED EGGS.—Boil eggs very hard, peel them, and put them in cold water till very cold; have ready a strong pickle of white-wine vinegar, with a little mace and whole pepper in it; put them in while it is quite hot, and stir, that they may all look alike; do not cover the pot till they are brown. Put them into a jar, and they will be ready in nine or ten days.

(*n*) INDIAN PICKLE.—Take one pound of ginger; let it lie in water one night; then scrape and cut it in slices; put it into a pot with dry salt, and let it stand till the other ingredients are ready. Peel and cut in pieces one clove of garlic, and salt it for three days, putting it in the sun to dry, then throw it into a gallon of vinegar placed in a strong jar, which must not be more than three parts full; add to it a pound of bruised mustard-seed, and some salt dried in the sun, half an ounce of powdered turmeric, half an ounce of long pepper, half a pound of flour of mustard, half a pound of shalots, a few cloves, and a little mace; stir all together. Whatever articles are to be pickled must be dried in the sun. The cauliflowers must be scalded in a strong brine, and then peeled; cabbage cut in; celery and radishes scraped; French beans and asparagus salted, and then scalded in salt and water, and dried in the sun. In this way all sorts of fruits or greens, as they come in season, may be added. As the vinegar wastes, add fresh.

Another (*very good*).—Take curry-powder and mustard, of each four ounces; garlic, four large roots; salad oil, half a pint; chilies, one ounce; long pepper and cloves, of each three ounces; allspice, half an ounce; boiling vinegar, two quarts. Mix. The cauliflowers, cabbage, &c., are to be prepared as in the above receipt, and then to be put in a Dutch oven before the fire for five minutes, after which they are to be added, and they will be fit to eat in a month.

1399. **PERMANENT SAUCES, KETCHUPS, &c.** These articles merely require to be kept in glass-bottles, well corked, with which precaution they will keep many years.

(*a*) **WALNUT KETCHUP.**—When walnuts are in a fit state to pickle, have a quantity pounded to a pulp, sprinkle them with a little salt, and let them remain until the following day, then press the juice from them and let that stand to settle; pour off the clear, and boil it half an hour. Then measure it, and to each quart put one pound of anchovies, and boil it gently for an hour, strain the anchovies from it and let it settle again; pour it from the sediment and put to every two quarts one pound of shalots, peeled, two ounces of cloves, two ounces of white peppercorns, one ounce of mace, a little Cayenne, one ounce of ginger, and the juice of a lemon (the whole of the spice is better if slightly bruised); let it simmer slowly until it has obtained the flavour, bottle it, and let it be well corked and sealed. It will keep many years.

(*b*) *Another, but more Expensive Method.* Take three hundred walnuts, pound them very small, adding two pounds of salt; when pounded, put one quart of vinegar, let it stand four days, then press it through a hair cloth, and to one gallon of juice add half an ounce of cloves, half an ounce of mace, half an ounce of nutmeg, and half an ounce of black pepper; and to every quart put one tea-spoonful of Cayenne pepper, half a pound of anchovies, six onions, and twelve shalots, with three or four cloves of garlic; the juice must be boiled and skimmed till quite clear; then bruise the spice, put it in, and let it boil full half an hour, adding one quart of port wine to every gallon; let it stand till cold; then pour off the clear liquor into the bottles, putting into each bottle a few shalots, mace, and cloves; cork it up, and keep in a dry place.

(*c*) **MUSHROOM KETCHUP.**—Put plenty of salt on large flat mushrooms, and let them stand for a few hours, then mash them well, and let them stand two days, stirring occasionally; press through a colander, and put all but the thick parts into a saucepan; boil and skim an hour, strain, and put it aside until the next day; then pour the liquor from the sediment, and to each quart add one ounce of black peppercorns, half an ounce of allspice, and the same of ginger; boil slowly until reduced nearly one half; when cold bottle it.

(*d*) **CUCUMBER KETCHUP.**—Take full-grown cucumbers and a third part of their weight of onions; pare and slice them; salt them well, and in twenty-four hours squeeze and strain them; to a quart of juice add a quart of white wine, and to every two quarts of liquor add three-quarters of a pound of anchovies, white pepper, mace, a stick of horseradish, and a good quantity of grated nutmeg; boil all together until the anchovies are dissolved; then strain it, and cover both till cold, when the spice should be again put into the ketchup and bottled. It will keep for years; a small quantity will flavour all white dishes without injuring the colour.

(*e*) **PRINCE OF WALES'S KETCHUP.**—With ripe elderberries fill what sized jar is required, and add as much vinegar as the jar will hold; put it into an oven after the bread is drawn, and let the jar remain there all night; run it through a jelly-bag, and to every pint of the juice put two ounces of anchovies, the same quantity of cloves, mace, ginger, and nutmeg; let it boil till the anchovies are dissolved and the liquor has thoroughly partaken of the taste of the spice; when cold bottle it for use, and keep it in a cool place.

(*f*) **TO MAKE OYSTER KETCHUP.**—Open one hundred oysters, and preserve all their liquor; add to them one pound of anchovies, three pints of white wine, and one lemon sliced, and half the peel; let this boil gently half an hour, then strain it through muslin, add to it cloves and mace, a quarter of an ounce of each, and one nutmeg; let it boil a quarter of an hour more, then add to it two ounces of shalots. When cold, bottle it with the spice and shalots. This is rather expensive, but it gives a delicious flavour to white gravies and sauces, such as those for minced veal, boiled fowl, &c.

(*g*) **COCKLE KETCHUP.**—Open the cockles, scald them in their own liquor; add a little water when the liquor settles, if there is not enough; strain through a cloth, then season with every savoury spice; and if for brown sauce add port, anchovies, and garlic, and burn a bit of sugar for colouring; if for white, omit these, and put a glass of sherry, lemon-juice and peel, mace, nutmeg, and white pepper. It is better to have cockles enough than to add water. Nearly as good as the oyster ketchup, but rather stronger in flavour, and used for the same purposes.

1400. PERMANENT SAUCES:—

(*a*) AN EXCELLENT SAUCE FOR CHOPS.—Pound fine an ounce of black pepper, and half an ounce of allspice, with an ounce of salt, and half an ounce of scraped horseradish, and the same of shalots peeled and quartered; put these ingredients into a pint of mushroom ketchup or walnut pickle, let them steep for a fortnight, and then strain it. A teaspoonful or two of this is generally an acceptable addition, mixed with the gravy usually sent up for chops and steaks; or added to thick melted butter.

(*b*) *Another.*—Two wineglasses of port and two of walnut pickle; four of mushroom ketchup; half a dozen anchovies pounded, the like number of shalots sliced and pounded; a table-spoonful of soy, and half a drachm of Cayenne pepper; let them simmer gently for ten minutes, strain it, and when cold put it into bottles; well corked and sealed over, it will keep for a considerable time.

(*c*) PLAIN TOMATO SAUCE.—Put tomatoes, when perfectly ripe, into an earthen jar, and set it in an oven, when the bread is drawn, till they are quite soft; then separate the skins from the pulp, and mix this with half the quantity of capsicum vinegar and a few cloves of garlic pounded. Add a little powdered ginger and salt. Some plain vinegar and Cayenne may be used instead of capsicum vinegar. Keep the mixture in small wide-mouthed bottles, well corked, and in a dry cool place.

(*d*) COMPOUND TOMATO SAUCE.—Add to one gallon of bruised tomatoes eight ounces of common salt, and let them stand three days, then squeeze out the juice, to which add four ounces of shalots, and a quarter of an ounce of black pepper; boil for half an hour, strain, and add mace, allspice, ginger, and nutmegs, of each half an ounce; coriander seed and cochineal, of each a quarter of an ounce. Simmer gently for half an hour, strain, and when cold, bottle.

(*e*) FLAVOURING FOR FISH SAUCE, &c.—Take walnuts fit for pickling, pound them, and let them stand twenty-four hours, then press the juice from them, and pour off the clear; to every pint of juice put one pound of anchovies, set it over the fire till the anchovies are dissolved, strain it and add one ounce of shalots, a quarter of an ounce of mace, a quarter of an ounce of cloves and of Jamaica pepper, with half a pint of best pickling vinegar; boil it a quarter of an hour, when cold, bottle it for use. A large table-spoonful is enough for nearly half a pint of butter. It will keep good for three or four years. It is very good to put in all brown gravies and hashes. One hundred walnuts will make about a pint.

(*f*) ANCHOVY SAUCE is much better, and also cheaper, bought at the Italian warehouses than made at home.

SUB-SECT. G.—ESSENCES AND OTHER FLAVOURING COMPOUNDS.

1401. The following list of essences, and other flavouring compounds, should be kept ready for use by all those who profess to carry out their cookery to perfection. Most of them may now be purchased at the shops of the druggists, but they are much better made at home, and require little trouble in the preparation. Some of them, however, require a still; and if such a thing is not at hand, it is necessary to buy them. When it is, the process is exactly that described at par. 1105, with the substitution of the articles here named, instead of those specified there.

(*a*) TINCTURE OF CELERY, OR CELERY FLAVOURING.

Celery seeds, bruised, half an ounce.
Spirits of wine, two ounces.

Put it into a bottle, and let it be corked, and stand near the fire for three or four days. A few drops will flavour a basin of broth, and greatly improve soups, &c. The seeds ought to be kept for boiling in soups, if the tincture is not approved of.

(*b*) ESSENCE OF BITTER ALMONDS.

Essential oil of bitter almonds, one drachm.
Proof spirit, seven drachms. Mix.

Used for flavouring custards, but it must be employed with great caution, as it is poisonous in doses above ten or twelve drops.

(*c*) ESSENCE OF MARJORAM.

Oil of marjoram, twenty drops.
Proof spirit, one ounce. Mix.

Useful for flavouring gravy.

Or, ESSENCE OF SWEET MARJORAM.

Tops of sweet marjoram, one pound.
Proof spirit, one gallon.
Water, half a gallon.

Steep, and, after putting in the still, distil off one gallon. Useful to flavour stews and sauces.

(d) Essence of Carraway Seeds.
Oil of carraway, one drachm.
Proof spirit, four drachms. Mix.

(e) Essence of Citrons.
Oil of citrons, thirty drops.
Proof spirit, one ounce. Mix.
A good addition to punch.

(f) Essence of Ginger.
Bruised ginger, one ounce.
Proof spirit, one pint.
Digest and strain.

(g) Essence of Orange or Lemon Peel. Rub the yellow peel of fresh lemons or oranges with lumps of white sugar, and when saturated, press them into a wide-mouthed bottle, and cork. This is a good way of preserving the flavour of those lemons or oranges which are in ordinary use, being much superior to the dried peel.

(h) Tincture of Orange or Lemon Peel.
Orange or lemon peel, sliced thin, four ounces.
Water, six ounces.
Proof spirit, four ounces.
Digest and strain.

(i) Essence of Peppermint.
Oil of peppermint, half a drachm.
Subcarbonate of potash, one drachm.
Proof spirit, one ounce.
Heat the potash, and add to it the spirit; then decant and mix with the oil.

(j) Essence of Spruce.—Take of the twigs of Scotch fir enough to fill the still, pour on sufficient water to cover them, and distil twice over.

(k) Essence of Allspice.
Oil of allspice, twenty drops.
Proof spirit, one ounce. Mix.

(l) Essence of Cinnamon.
Oil of cinnamon, twenty drops.
Proof spirit, one ounce. Mix.

(m) Essence of Nutmeg.
Oil of nutmeg, twenty drops.
Proof spirit, one ounce. Mix.

(n) Essence of Cloves.
Oil of cloves, twenty drops.
Proof spirit, one ounce. Mix.
For sweets and mulled wine.

Or, Infuse a quarter of an ounce of the cloves themselves in two ounces of proof spirit for a fortnight, then strain.

(o) Essence of Mace.
Oil of mace, twenty drops.
Proof spirit, one ounce. Mix.
Useful for flavouring sweets and white sauces, or mulled wine.

Or, Proceed as for essence of cloves.

(p) Essence of Savoury Spices.
Black pepper, one ounce.
Powdered allspice, half an ounce.
Grated nutmeg, quarter of an ounce.
Proof spirit, one pint.
Mix, and steep ten days, then decant. Useful for flavouring savoury dishes.

(q) Tincture of Cochineal.
Cochineal, ten grains.
Proof spirit, one ounce.
Mix in a glass bottle, and steep. The cochineal, unless powdered, takes a long time to dissolve, and the bottle must be frequently shaken.

Sub-sect. H.—Drying.

1402. This process is very simple, when not complicated with sugar, salt, or other preservative materials. It is conducted either in the sun, or the shade, or by the agency of a stove, or of a clean frying-pan.

1403. All Herbs ought to be gathered when they begin to flower, on a dry day, as soon as the dew is off. The *tops, leaves, or the whole herbs*, should at once be cleared from discoloured or rotten leaves, screened from earth or dust, placed on hurdles covered with blotting-paper, and exposed to the sun or the heat of a stove in a dry, airy, place. The quicker they are dried the better, as they have less time to grow mouldy or ferment; hence they should be spread thin, and frequently turned. When dried, they should be well shaken in a large sieve or basket, to get rid of the eggs of insects or other foreign bodies. Almost all herbs, in drying, give out a certain portion of their aromatic properties, residing generally in their essental oil, and hence they should not be continued in the sun, or near the stove, longer than necessary. When dry, they should be coarsely powdered, and at once put into wide-mouthed glass bottles, and well corked for future use. In this way, thyme, mint, marjoram, sage, and, in fact, all the pot-herbs may be kept full of flavour for twelve months at least, or even longer if necessary; while if they are exposed to the air hung up in the kitchen, they soon lose almost all their distinguishing and peculiar characteristics.

(a) To Make Mushroom Powder.—Take large mushrooms, peel them, and take out the gills, dry them in an oven or tins, and when dry, pound them in a mortar.

Sect. 12.—Dressmaking and Plain Sewing.

Sub-sect. A.—Dressmaking.

1404. This subject has been already alluded to at page 339, where the comparative cost of making dresses at home and abroad is considered. There can, of course, be no doubt that if they can be made by the members of the family or the servants, the saving is complete; but short of this, as before remarked, there is not very much economy in making them at home. With regard to patterns and written instructions for this department, it is, I believe, idle to attempt them, as they require too much actual demonstration to render any written instruction of any avail. Besides this, patterns are so continually changing, that what is written this year is useless the next

SUB-SECT. B.—PLAIN SEWING.

1405. PLAIN SEWING, like dressmaking, requires actual demonstration to make any instruction efficacious. Every mistress, moreover, is supposed in these days to be able to show the mere plans of hemming, sewing, herring-bone, &c.; and, as in dressmaking, so in this division of female labour, patterns are constantly changing. A shirt appears a very easy thing to make; and so it is, when the pattern is decided on; but no gentleman likes to be compelled to wear one which does not suit him, and will prefer selecting one for himself which in his opinion is the correct thing. All mistresses, therefore, who are called upon to make shirts at home will act wisely by making their husbands, brothers, or other male dependents on their kindness, decide for themselves what they wish, and choose a single shirt, and then with that one before them there is no difficulty in cutting out more.

1406. THE QUANTITIES required are the only points of information which can be of any service, as this perhaps may be a subject of dispute between the two sexes. The following, therefore, are annexed for the information of the male sex:—*A piece* of linen (shirting) is generally twenty-six yards long and one yard wide, but some shirtings are seven-eighths or three-quarters wide. A piece, as first described, will make eight ordinary shirts, or seven large ones; twenty-one to twenty-five yards of yard-wide calico will make six night-shirts, according to the size and length; thirty yards of yard-wide linen or calico will make twelve average-sized chemises; and twenty-four yards will be required for six night chemises. Petticoats are made in such various styles, that it is difficult to make a calculation; but, on the average, they may be said to take six yards a-piece.

1407. THE REPAIRS OF HOUSE LINEN, as well as the body linen, should be carefully attended to, remembering always that here in reality "a stitch in time saves nine." When sheets begin to wear in the middle, they are generally mended by turning the sides into the middle. In inferior sheets they are originally composed of two breadths, joined at the selvage; and for these the work must be unpicked carefully, and the outside selvages sewn together instead. But when the better kinds of sheeting are used they are of the full width, and in them the sheet must be cut down the middle, and then the two outside selvages sewn together, and the raw edges from the inside hemmed. Small holes ought to be darned as soon as they appear, or even as soon as there is the smallest sign of wearing thin, when either in sheets, pillow-cases, or stockings; a darn will be much more efficacious and neat than after a hole has actually made its appearance. If this kind of early darning is properly carried out, a patch would seldom or never be required on any kind of linen or calico.

1408. MARKING is effected in the present day by marking-ink, which is a solution of nitrate of silver, in the proportion of one drachm of the nitrate to three of solution of ammonia, and ten grains of gum arabic. In order to render this indelible, the spot which is to be marked ought to be wetted with a little of the following:—

Gum arabic, one drachm.
Bicarbonate of soda, two drachms.
Water, two ounces. Mix.

When this is dry, use the ink with a *quill-pen*, expose it to the air and sun, and iron it before washing. Nitrate of silver used without the soda, is easily taken out by rubbing in a strong solution of the iodide of potassium, or its powder laid on and moistened with water. This salt decomposes the nitrate of silver, and converts it into an iodide, which is perfectly white, and does not therefore show in white linens. It is with this that the London receiver takes out many of the marks in stolen handkerchiefs, &c. The old-fashioned marking is done in cross-stitch, with coloured cotton or thread, or sometimes with a long human hair.

SUB-SECT. C.—REPAIRS OF BOOTS AND SHOES.

1409. THE REPAIRS OF BOOTS AND SHOES, by means of gutta percha, may be effected with great facility at home, and with a considerable saving. This is particularly the case with children's out-of-door shoes, for which are required good waterproof soles, capable also of lasting as long as those made of leather. The working of leather is an art which can scarcely be carried out by those who have not served their apprenticeship to it, and therefore any repairs by its means are wholly out of the question, but with gutta percha there is no sewing, and it may be applied to an old worn-out sole very readily by means of a solution sold with it at the gutta percha shops. The new-soling of boys' shoes generally costs about 3s. per pair, and of men's 3s. 6d. to 4s.; but the gutta percha for these may be applied for 9d. or 1s., and in a very few minutes' time. The plan is as follows:—Dry the soles perfectly before the fire, and remove all loose bits of leather and all the dirt adhering to them; then warm them to about 120 degrees, after which, the gutta percha being warmed to the same temperature, the solution is quickly smeared over both the soles, and the corresponding surface of the gutta percha, which is immediately to be applied to the sole, and rubbed forcibly backwards and forwards until all the air is expelled and the two surfaces are in close apposition. When this is effected, they must be held together by pressure until cold; the simplest plan being to wind a thick cord round both. Finally, after being quite cold, the edges are trimmed off on a level with the old sole; and if desired to be very neat, they may be polished with a piece of hot metal.

Sect. 13.—Washing and Cleaning.

Sub-section A.—Washing at Home.

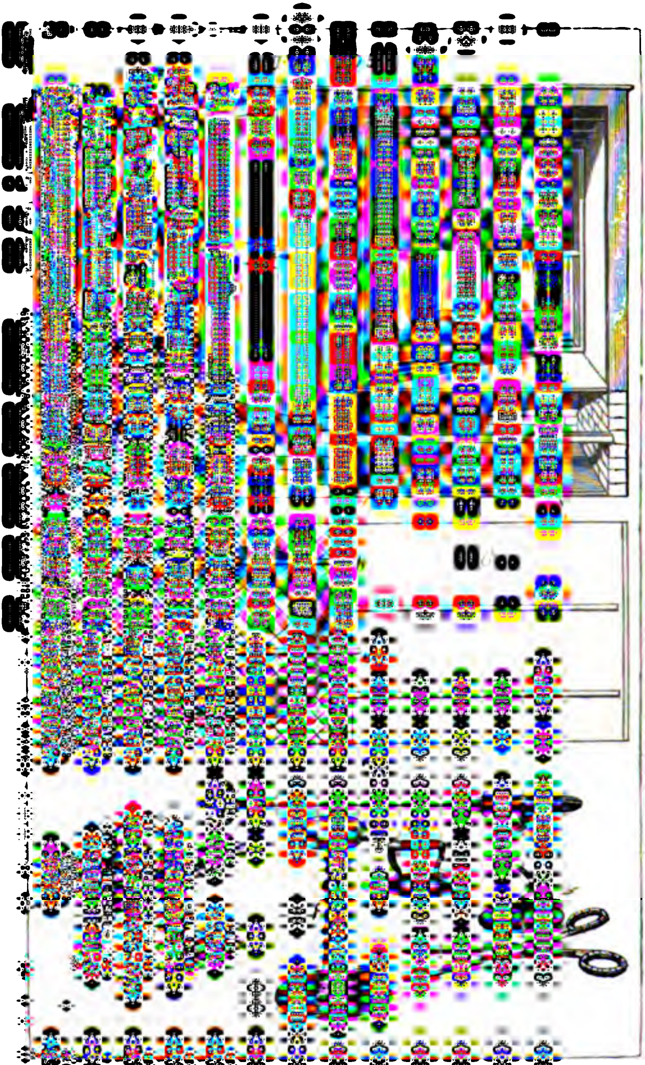
1410. General Remarks.—Washing at home would, I think, never be attempted, except in very large establishments, if it were not for the saving in point of expense the plan really affords. In some cases, where it so happens that there is a good servant, the result may be satisfactory in point of execution, as well as in cost; and, in general, it is expected that the wear and tear shall be less, which, however, is part of the saving. But if servants are allowed to hurry over their work, the destruction to clothes washed at home is as great as any laundress is likely to cause; so that the mistress must not fancy, the moment that she determines to submit to all the annoyances of a washing-day at short intervals, that her frills will have no little accidents, and her collars last for ever. Nevertheless, although in common with every one who has felt the annoyance, I dislike the system; yet I am ready to admit that it really is what it professes to be—a decided saving, always in point of actual outlay, and generally in the saving occasioned by the non-destruction of the clothes, which is the result of the adoption of improper methods of washing. Washing machines, caustic alkalies, wringing machines, bad drying, &c., are all injurious to clothes, which, when they require rubbing, can scarcely suffer so little injury from anything as from the human hand; and in their drying will never be so sweet and clean as when dried in the open air. The American washing machine, as described below, at par. 1418, appears to be an exception to this rule; but it is as yet a "new broom" and it may at last prove to sweep not quite so clean as it is said to do, though I believe it to be a most ingenious invention.

1411. The Utensils necessary for home-washing are—1st, a *copper*, sufficiently large to boil water for the wash; 2nd, *washing-tubs*, also in proportion; 3rd, *posts*, *lines*, *props*, and *pegs*, for drying out of doors; 4th, a *hot-closet*, for drying in-doors; 5th, the *materials for ironing*, consisting of an *ironing-board*, *iron-cloths*, an *ironing-stove* and *irons*, *flat*, *egg-shaped*, *gaufering*, and *Italian*, together with a *crimping machine*; and 6th, a *mangle*.

1412. The Copper should really be of that metal, though a galvanized iron boiler will answer pretty well, if it is kept carefully greased at the edges with a little suet, used after every wash. The slightest contact of the rust from this metal is apt to produce iron-moulds, and in consequence copper is always employed when the house will afford it. For a small household, a copper of fifteen or sixteen gallons will suffice; but for any moderately large wash, one of thirty or forty is required, not only to afford the hot water, but to contain the things which require boiling. The prices of these boilers are given at page 20.

1413. Washing-tubs are either circular or oval, or in the form of a parallelogram, in which last case they are called trays. Circular tubs are the cheapest, but are not so convenient; oval tubs come the next in cost and in durability, both being made of oak; while the trays are more costly in the original outlay, and from the nature of their formation and their material (deal), are much more liable to decay. The round tubs cost from 6s. to 12s. each, the oval from 9s. to 16s. each, and the trays from 10s. to 18s. each.

1414. Posts are either permanent or moveable. In either case they consist of wooden posts, about eight feet high from the ground, and four inches in diameter at the bottom, diminishing to three at the top, where there are four cross pegs to fix the lines. They are fixed in the ground as ordinary posts, or let into sockets, from which they may be removed at pleasure. The *line* is either of flax, or hair, or gutta percha, the hair being the best in every respect. A *prop* is required in the interval between the posts, about ten feet long,



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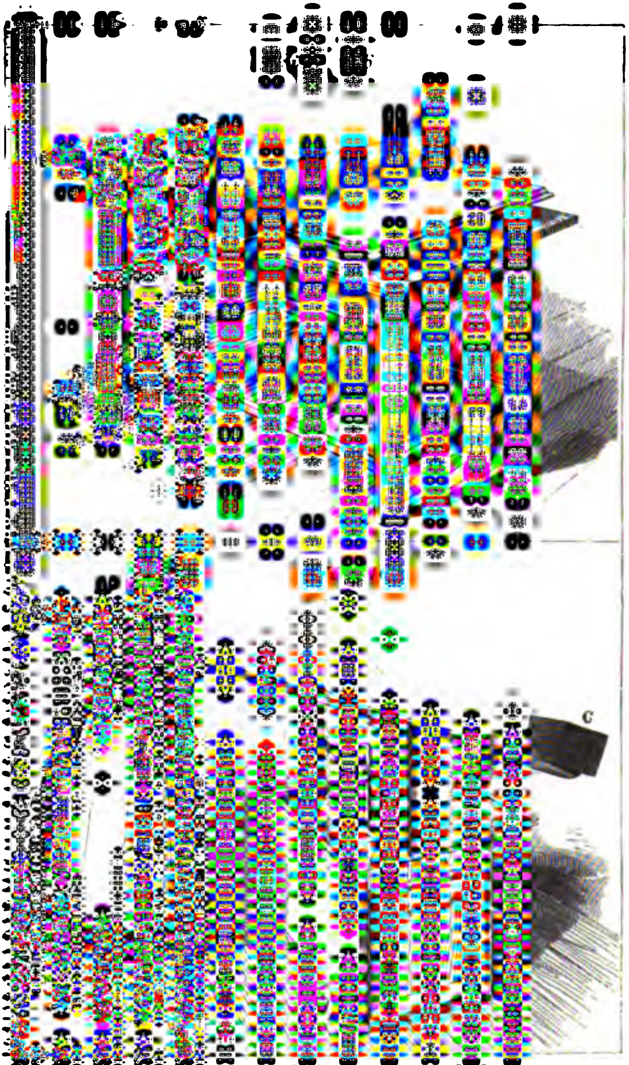

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with a fork at the top, which catches hold of the line after the clothes are on. Lastly, the *pegs* are wooden, and are made to confine the clothes to the line. There are three kinds: the English clothes-peg, with a tin ferrule; the American, made without the ferrule; and the improved American, which has a brass spring, and which lays hold more tightly than the others, but is apt to stain the linen, from the brass wire becoming covered with verdigris.

1415. THE HOT CLOSET is a substitute for the drying-ground, either in case of wet weather, or to be used for those articles which will not bear the sun. It consists of a chamber heated by means of a stove, with a current of air maintained through it and passing out at the top. Iron pipes are sometimes used for the purpose, but a brick flue, similar to that constructed for green-houses, is the best, and gives out quite sufficient heat for the drying of any number of home-washed articles. Two plain brick chambers are built, about eight to twelve feet square, and divided by a thin iron partition, in which are narrow slits at intervals of a foot, just high and wide enough to allow "a horse" to travel backwards and forwards through them. One of these chambers (see *fig.* 105 A) has a furnace and flue in it, beginning at one end and returning to the same side, where it passes out in the ordinary way. Above this flue, and separated from it by a wire-grating, is the chamber for the horses (*b b b b b*), which are suspended from irons attached to the ceiling, and can be dragged out into the outer chamber through the slits in the partition. These horses run best suspended on the same principle as the doors shown at *figs.* 30 and 31, but made of common smith's work, and at a very cheap rate. When it is intended to be used, the flue is lighted, and a damper at the upper ventilator is closed, so as to allow the heat to be retained. As soon as the chamber is heated, the horses (*b b b b b*) are drawn out upon the table (*c c*) in the outer compartment, where they receive their clothes, and are then pushed into their places. The dampers are next all thrown open, and the fire burns fiercely, causing a great heat to be radiated from the flue, and a large quantity of air to enter and pass through the drying-chamber. When the laundry-maid finds the clothes are sufficiently dry, she draws out each horse in succession and takes them off, folding them at once on the table, and replacing the horse, either with fresh wet clothes on or not, as she may have occasion In the figure, two of these horses are shown drawn out, and two in their places. In this way a "wash" is soon dried, and on the following day the board (*c c*) serves as an excellent ironing-table, while the stove is easily constructed so as to heat the irons.

1416. THE IRONING-BOARD is either provided for as above, or it is made by the carpenter in a separate form, to be placed upon any table. In this case it ought to have cramps to confine it in its place, as a rickety board is a great hindrance. The cloths consist of a thick flannel made on purpose, called swanskin, with another under it to afford support; and sometimes, for fine things, on the top of all, a smooth holland. The irons are those known as the flat-iron (*fig.* 105 D), the egg-iron (*fig.* 105 E), the gaufering-iron (*fig.* 105 F), and the Italian-iron (*fig.* 105 G), which will be readily recognized. Besides these is the crimping machine (*fig.* 105 H).

1417. THE MANGLE is a machine by which washed articles rolled round wooden rollers, and protected by a linen cloth, are submitted to great pressure. In the ordinary mangle, a wooden box filled with heavy stones, and about eight feet by three feet, is moved backwards and forwards by a peculiar yet simple arrangement, over two rollers, with the clothes to be mangled encircling them, and laid on a strong bed of wood smoothly planed. The box is first moved in one direction, and lifted by continuing to turn the handle; the roller is then placed on the bed, and the box dropped upon it, when, by reversing the action, it passes over the roller as far as its length will allow it, and if necessary liberates the other at the end of its action, when it also may be replaced or not. In a few turns backwards and forwards the clothes are mangled, that is, they receive a polish from the extreme weight. Table-cloths, sheets, and all flat articles without plaits are thus made to receive a tolerably high gloss. Sometimes, however, the premises are not large enough to receive such an unwieldy machine, and for this several smaller ones have been invented, acting by means of a spring, or some other substitute for the weight. Of these, Kent's patent portable mangle (*fig.* 106) is the best, though still I believe somewhat inferior to the old-fashioned machine. In it the bed on which the linen is mangled is not a fixture, as in the ordinary mangle, but it traverses backwards and forwards, whilst the roller on which is the linen remains stationary. The pressure is obtained by means of springs adjusted by a screw, and the roller is either of metal or wood. The figure shows the machine on an ordinary table; but when taken to pieces, it consists of the bed, (also useful as an ironing-board, and occupying no more space,) and also of the roller and works, which require a box two feet eight inches long and one foot square. The price is, with metal roller, £5 10s., or with wooden roller, £4 10s.

1418. SEVERAL WASHING MACHINES have been invented in this country, which profess to supersede the use of manual labour; but I do not believe that they can effect this with advantage. Even the "dolly," which is very generally used by washerwomen, injures the clothes, and cannot compare with the human hand. But an exceedingly ingenious washing-machine has been recently invented by a farmer of Indiana, United States, and patented by a Mr. Moore, who sells it at 183, High Holborn, under the name of the AMERICAN FLOATING BALL WASHING-MACHINE; the price being from £3 to £10, according to the size. It is suited to all kinds of fabrics, and the object is to dispense with the great amount of mechanical labour which is now so necessary in the old plan. The essential characteristics of the invention consist in the employment of floating balls, 200 or 300 of which are put into a wooden trough (*fig.* 107 A), two or three feet long by fifteen inches wide, containing water or soap-suds, in which, of course, they float. The balls are about the size of an orange, and made of elm wood. A fulcrum is fixed at the back of the trough, having a cross-beam (B) working in it, resembling a common pump-handle. Suspended to this handle is an apparatus like a small window-sash and frame, hanging immediately over the mouth of the trough, and capable of being immersed in it. To this the clothes to be washed are fastened in a mass—the more the better, the contrivance for the purpose being very simple, and exactly as if they were placed on the window-sill, and between it and the sash, where they are confined by the agency of smooth wooden teeth. At the extreme end of the beam, on the opposite side of the fulcrum to that where the clothes are attached, is a box (C), into which a weight may be put, so as slightly to counterbalance the frame and clothes, and raise it into the air as soon as it is set free. This being all arranged, the beam-handle is moved up and down, as in pumping water, the effect of which is to depress the frame with its clothes among the balls in the suds, and move it about among them, the weights restoring it to its original position. The balls produce a gentle friction upon the linen, which, without in the slightest degree injuring its fabric, or breaking or tearing off buttons, effectually removes all the dirt in an incredibly small space of time. The labour required for an ordinary home-washing machine is not more than can be afforded by a child of twelve or fourteen; and the action on the clothes imitates very closely that of the human hands in pounding, scrubbing, and squeezing; and as there is no solid resistance afforded, but only that given by the floating balls, there is scarcely so much injury by friction as in the washing by hand. In using it, the fingers are not kept constantly wet, as in ordinary washing, but only as much as is required to immerse the linen, and remove it from the frame. Altogether, it is an exceedingly simple and ingenious machine; and, as far as my judgment goes, it appears likely to be of great use, not only in private families, but in public laundries, in many of which it is already employed. Its projectors profess that the size for private use will do a day's washing with ease in two hours; and that the large-sized machine will wash six thousand towels, or other similar articles, per day. But as practice is not always found to coincide with theory until it has stood the test of a full trial, I should till then advise the adherence to the old method of using a washerwoman's thews and sinews, aided only by a common wringing-machine, which lays hold of the heavy articles, such as sheets, counterpanes, &c., and by turning a handle does that easily which the strongest woman can hardly effect with the whole power of her arms. Whitelock's patent wringing-machine is the best for the purpose.

1419. With these utensils, together with soap, starch, and blue, already described under the 16th section of the last chapter, the laundry-maid proceeds to the operations of her first day, which is generally called the washing-day. Five distinct periods are required in all washes—1st, the *washing and bluing;* 2nd, the *drying;* 3rd, the *starching;* 4th, the *folding;* and 5th, the *ironing and mangling.*

1420. THE WASHING generally requires the aid of a woman who goes out for this express purpose, and hence is called a washerwoman; receiving from 1s. to 2s. 6d. a-day, according to the custom of the place, together with plenty of eatables and drinkables. This woman, with or without aid, washes all the clothes according to her own plan, or, if desired, that of her employer; after which they are hung out on the lines, propped from the ground by the props, or in wet weather they are dried in the drying-closet. When dry, they are brought in, and those articles which are to be starched are dipped in that material, while the others are sprinkled with water, folded, and put by for ironing or mangling, as may be the nature of the article.

1421. BEFORE PROCEEDING TO WASH, all the things must be carefully looked over and sorted, taking care to tie the pairs together. Articles badly torn should be mended, as a rent begun before the wash is sure to be increased by scrubbing. For washing put out, an inventory is always taken; but for home-washing this is scarcely necessary. All stains should be now attended to, using the proper application for each kind (see pages 227, 228). The house-linen, body-linen, coloured things, and flannels are all washed separately, and must therefore be sorted apart. Coloured things should not remain in the sun, but all white articles are the better for being submitted to his rays, as long as the weather continues fine. The following methods are adopted in the families of different ladies who are good managers, and each of whom expresses a confident opinion on the superiority of her own.

(*a*) Plan of Washing Found to Answer Admirably.—Take one pound of yellow soap, and three ounces of Green's patent washing-powder (made at West Bromwich), dissolve in two quarts of water, and boil to a jelly. Add this quantity to twelve gallons of cold water in the furnace, then put the finest of the clothes into the water while cold, heat the furnace and allow them to remain till they have really boiled for half an hour. Take them out and rinse them twice, that is, in two clear waters. In taking them out of the furnace, lay them in a narrow-bottomed basket over the furnace, that the water may drain back into it, before putting them into clear water. After rinsing them the first time, pour the water back into the furnace to boil the second lot of clothes in, and let the second water be used for the first rinsing of the next lot of clothes, and so on, bluing each lot after being rinsed twice. When the water in the furnace becomes too weak, add three-quarters of a pound of soap and one ounce of the washing-powder, boiled to a jelly, as before. If the wristbands, or any part of the clothes, are very dirty, rub a little soap on, and soak them one or two days beforehand. They must be carefully looked over when in the first rinsing tub, and any dirty places washed out and rinsed again. If the furnace is small, a less quantity of soap and soda must be used. This plan requires a plentiful supply of water, and spring or river water is better than rain water, on account of the rinsing, unless the latter is completely purified by filtration.

(*b*) Recipe for Washing Forty Dozen of Clothes, the flannels, woollen socks, and coloured things to be washed first in the old way, and not counted.—Two days before the wash, take two and a half pounds of quick-lime, pour one gallon of boiling water on it, and in a short time add a little cold water to make the lime settle; let it stand twenty-four hours, then skim, and pour it clear from the sediment. In this solution, which will be about three quarts, boil two and a half pounds of washing soda, and the same of pale yellow soap, the soap to be cut in slices. Boil it till all is dissolved, then pour it into earthen vessels to cool into a paste, which must be done the day before the wash. The clothes having been previously soaked all night, are to be looked carefully over, and the wristbands, collars, or any stained part, rubbed by hand in plain hot water, then put to boil, loose, in the copper with as much of the paste as will make a good strong lather; if any scum rises it must be taken off. The clothes are to be boiled half an hour, then "dollied" a short time, and well rinsed in two waters; linen things should be rinsed a third time in spring water, with a little blue in it. The remainder of the paste is put in the copper as it is filled up with water for use. This plan makes the clothes, particularly the callicoes, a beautiful colour, and is found not to wear them out so much as the old plan.

(*c*) When there are many Coloured Things, dissolve half a pound of soap into the water to make a lather, instead of rubbing soap on them. And to Wash the Flannels and Worsted Stockings, make a good lather of yellow soap and warm, not hot, rain water. Rub them, and put very little soap upon them. Wash them in this way in two waters, and then in a clear lather, with a little blue in it. Squeeze them in a cloth, and shake them well. Pull the stockings out from time to time, as the more they are shaken the softer they will be.

(*d*) In Using the American Washing-Machine, described at par. 1418, the clothes, unless very dirty, merely require soaking for about half an hour. They are then folded, roughly, into such a compass that they will not extend in width more than nine inches or a foot, and in length not beyond the frame in which they are to be placed. A shirt, therefore, must be folded up about twice, after which it is placed in the frame, and this will hold at least a dozen shirts at a time, or perhaps more, as wetted clothes lie extremely close. The frame is then closed by a screw and dropped into the suds, prepared according to either of the receipts given at (*a* and *b*), or merely with soap and water, and with the balls occupying almost the whole of the space, and not simply floating at the top. As soon as fixed in this frame, the clothes are moved up and down among the balls for a few minutes (about three), and then they are taken out of the machine and rinsed as usual in clear water; after which the bluing is to be done according to par. 1422. When the clothes are *very dirty indeed*, they require boiling as well as "balling" in the machine; but this is said to be very seldom necessary. Very large articles, such as thick blankets, or heavy counterpanes, may be folded in halves and put in, one-half at a time, the other half hanging over the side of the trough. With the aid of this machine, I am told, that any family-washing may be easily managed without any extra assistance in the shape of a regular washerwoman, so that the prime cost would be saved in the first year, or very nearly so. From the nature of the mechanical force applied, I am inclined to believe that the injury to the fabrics is really less than by the human hand.

(*e*) THE FOLLOWING INSTRUCTIONS FOR WASHING PRINTED DRESSES are exceedingly valuable:—Take about one pound of bran, secure it in a gauze or muslin bag, boil it in a pailful of soft water, and when the dresses have been washed briskly in this water (which should not be used scalding hot) very little, if any, soap-water washing will be necessary; yellow soap should not on any account be used, nor soda, pearlash, &c. Printed dresses should not be washed with the body-linen; and a most important advantage will be derived from a plentiful rinsing in clear pump or river water, and drying in the open air in the shade; or if in a room, at a distance from the fire.

Another Method of Washing Coloured Dresses.—Have ready plenty of clean soft water; it spoils coloured dresses to wash them in the dirty suds left after white clothes are done, though this is a very common practice with bad washers. The water must be warm, but by no means hot, lest it injures the colours. Rub soap enough into the water to make a strong lather before puting in the dress (adding a table-spoonful of ox-gall), and then wash it well; have ready a large earthen pan, filled with a little weak starch tinged with blue; printed lawns or muslins will be much improved by mixing a little gum arabic water with the starch—for instance, a table-spoonful; put the dress into it, and run it through the starch; then squeeze it out, open it well, clap it, and hang it immediately out to dry in the shade, taking the sleeves by the cuffs and pinning them up to the skirt, so as to spread them wide and cause them to dry the sooner. If coloured clothes continue wet too long, no precaution can prevent the colours running into streaks; this will certainly happen if they are allowed to lie in the water; they must always be done as fast as possible, till the whole process is completed; if the colours are once injured, nothing can restore them; but by good management they may always be preserved, unless in coarse low-priced calicoes, and many of them wash perfectly well. As soon as the dress is *quite dry* take it in; but unless it is wanted immediately do not sprinkle it, lest in lying damp the colours should be impaired; it is always the best way, however, to fold and iron it immediately.—Another way of fixing the colours in a dress is to grate raw potato into the water in which the dress is washed. If dresses are to be put by for the winter-season they should always be washed and dried, but not starched nor ironed; they should be rolled up closely in a towel. Mousseline-de-laine, merino, or any dresses of woollen fabric, should be taken from the bodies, well brushed, and washed in two clean lathers; the water should be pressed and shaken out, and the dresses then rolled tightly up in a large dry cloth to absorb the remainder of the water; they should then be pulled straight, dried quickly in a shady place, and ironed with a cool iron immediately.

(*f*) TO PREVENT SILK HANDKERCHIEFS LOSING COLOUR.—Dip them, or any other coloured silk article, into salt and water *before* they are washed, which will preserve the colour (a small handful of common salt in a washhand-basin of water).

(*g*) AN ADMIRABLE METHOD TO WASH LACE.—Soap each piece well, and (if *dirty*) lay it in cold soft water over night, then work the soap out by squeezing it occasionally, dipping and squeezing it again. Change the water two or three times, repeating the soaping and squeezing; and put it (again fresh soaped) into a saucepan of cold water to simmer for a quarter of an hour or so; boil it twice over if necessary, and if still a bad colour, bleach a little on the grass before finishing. Rinse it in plenty of hard water, with as much blue as will suffice. Then take about twelve lumps of sugar (more or less, according to the quantity of lace), and dissolve it in about a teacupful of hot water in a large basin with a little blue; dip each piece of lace, &c., in separately, and squeeze, taking first those which require to be stiffest, and afterwards shake them out and spread upon a clean cloth; roll them up for an hour or more, then put them into a fresh clean cloth, to lie rolled up till the iron is ready. Iron with a cool iron.

Another Method of Washing Lace.—Tack it on a bottle with the finest cotton (if the lace is dirty, soap a little on the bottle), cover it over with linen, put it in a bell-metal kettle with cold soft water and sliced soap, stew it two or three hours, drain the bottle and hang it up to dry. If it is wished at all stiff, pin it out on a bed-cover or a cloth, and take a clean fresh-rinsed sponge, dip it in thin gum-water and sponge the lace with it.

(*h*) To Prepare New Flannel by Shrinking.—Lay the flannel all night in a tub of cold soft water. In the morning pour off the whole of the water, and drain, but do not wring the flannel. Make a light suds of water quite warm (but not hot), and of white soap or whitish Castile. Wash the flannel thoroughly through the suds, and wring it out as dry as possible. Then having shaken it, stretched it, and folded it smoothly down on a clean table to make it straight and even, hang it out immediately. When about half dry, go to it, stretch, shake, and turn it. Take it in while it is still damp, fold it smooth, cover it with a clean towel, and after it has lain half an hour, iron it with a rather cool iron.

(*i*) To Wash Flannel.—Flannel should always be washed with white soap; otherwise, it will neither look well nor feel soft. The water must be warm, but not boiling, as it shrinks flannel to scald it. Wash it in clean water, and entirely by itself. Rub the soap to a strong lather in the water, before the flannel is put in; for if the soap is rubbed on the flannel itself, it will become hard and stiff. Wash it in this manner through two warm waters, with a strong lather in each. Rinse it in another warm water, with just sufficient soap in it to give the water a slight whitish appearance. To this rinsing water it is better to add a little blue from the indigo bag. Cold rinsing water is found to harden the flannel. When it has been rinsed thoroughly, wring it hard, shake it well, and spread it out on the clothes-line. While drying, shake, stretch, and turn it several times. It should dry slowly. Flannel *always* washed precisely in this manner will look white, and feel soft as long as it lasts, retaining a new appearance, and scarcely shrinking at all. But if *once* badly washed with scalding water, rubbed with brown soap, and rinsed in cold water, it will never again look well.

(*j*) To Wash Flannel that has Become Yellow.—Boil four table-spoonfuls of flour in four quarts of water, stirring it well. Then pour half the boiling liquid over the flannel, let it remain till the water cools, rub the flannel, but use no soap. Rinse it through several waters, then repeat the process with the remainder of the flour and water in a boiling state; again rinse it through several waters, and hang it up to drain and dry. Do not wring it.

(*k*) To Wash Black Silk Stockings.—Cut some white soap into thin bits, and boil it in soft water till thoroughly dissolved. Then mix a little of it in cold water, adding a teaspoonful of gall. Having turned the stockings on the wrong side, and rubbed a little of the boiled soap on the dirtiest places, wash them well through the lukewarm suds. Repeat the washing in fresh suds and water, till they are quite clean. Then rinse them through two cold waters, adding to the last a little blue from the blue-bag. Then squeeze them well, stretch them even, and hang them out immediately. While still damp, turn them right side out, stretch and pin them on an ironing blanket, and with the end of a bit of rolled-up flannel, or a smooth stone, rub them hard and quick one way, till they are quite dry, and look smooth and glossy. This is better than to iron them, which always gives silk stockings an old appearance.

(*l*) To Wash White Silk Stockings.—Make a lather of white soap and warm soft water; stretch the stockings on a table, and with a roll of rough, coarse cloth, dipped in the lather, rub them hard, first on one side, then on the other. Repeat the process with three lathers. Then dip them in three waters to rinse them, and when quite clean hang them up, without rinsing, the wrong side outward. When half dry take them down, stretch and pin them, the right side out, on a cloth. Do not iron them; but rub them till smooth with a small roll of clean flannel.

Another Method.—Wash them in cold soap and water. In the last rinsing, it is better to put a little archil. Shake them well; roll them in a cloth, and pull them out several times.

(*m*) To Wash a Book-muslin Dress.—Make some strong suds with white soap and water. Put in the dress, and wash it well; squeezing and pressing rather than rubbing it, as book-muslin tears easily, and, without great care, will not last long. Wash it through a second suds, and then pass it through two rinsing waters; adding *a very little blue* to the last. Then open out the dress; and, while wet, run it through a thin starch, diluted with water either warm or cold. Stretch it, and hang it in the sun to dry. Afterwards, sprinkle it, and roll it up in a clean white towel, letting it lie for half an hour or more. Then open it out, stretch it even, and clap it in the hands till clear all over. Have irons ready and iron it carefully on the wrong side wherever practicable.

(*n*) To Wash a Counterpane.—Put in to soak over-night in a large tub with lukewarm water, in which has been mixed about a quart of lye, and rub some yellow soap well into it. Next morning, lift it up and down awhile in the soaking water; then wring it out, and put it into a tub of clean soap-suds, and give it a good washing. Then do the same through a second suds, rather hotter than the first, and wring it out very hard. Rinse it through three cold waters; adding to the last a little blue from the blue-bag. Having wrung the counterpane very dry, hang it out in the sun, wrong side outward; taking it in towards evening. Next day hang it out again, with the right side out. It may probably take three days to dry completely. It must on no account be put away with the slightest dampness about it. In washing a quilt or counterpane, never use soda.

(c) **BOILING AFTER WASHING** is considered necessary by some laundresses in all cases. Its effect is to extract any remains of dirt left in the preceding processes, and also to take out the soap, whether dirty or clean. Without it, the clothes are supposed to smell disagreeably, and to be of a yellow colour. The water for this purpose should be clear and soft; and the different articles require different lengths of time—viz., muslins and fine things, from ten minutes to a quarter of an hour; coarse things, for an hour, or more if very thick; calicoes and shirts, for about half an hour. In the processes described under (a) and (b), the second boiling is said not to be required.

1422. **BLUING** consists in colouring the last rinsing water very slightly with blue (see par. 1136), so that the otherwise yellow colour of the linen is got rid of. Care should be taken to avoid using so much as to make the shade too deep, since a decided blue is just as objectionable as a decided yellow. The blue is tied in a small flannel bag, which is dipped in the water and squeezed, so as at once to stain the liquor as it comes out, and also to graduate its shade with greater delicacy.

1423. **IN STARCHING**, the first thing to be done is "to make the starch," that is, to dissolve *the starch as sold* in hot water, which makes a thick jelly. To make each quantity of this jelly-starch, put into a basin a heaped table-spoonful of the dry starch, or rather more, if the quality is not very good, and rub this down with a little *cold* water till it is of the consistence of cream. When quite smooth, add enough boiling water to make a quart in the whole, and if it does not turn to a thick jelly, put it into a saucepan, and stir it while over the fire until it does. Towards the last, to prevent the iron sticking, it should be stirred two or three times round the pot with a piece of wax or tallow candle; instead of which some people put in a lump of sugar. It is then strained through a piece of coarse muslin, and put by for use when nearly cold. The starch as sold is generally slightly coloured with blue; but if not, the blue-bag must be used by squeezing a little of its contents into the basin. When the things are dry, they are dipped into the starch, wrung out, and dried afresh, or by some people they are, after the starching, dipped quickly into water, shaken, and then dried. Some articles, such as shirts, require to be carefully starched in parts only, and must be, therefore, dipped to the extent which is to be stiffened, and no *further*.

1424. **FOLDING** is necessary before ironing or mangling, in order to get rid of the creases made in the drying. The things are generally folded in separate sections, dividing the ironing things from those to be mangled; and, in general, ranging all the shirts together, then the chemises, petticoats, &c. Whatever articles are washed with their insides out are now reversed; and if the ironing is to be delayed three or four hours, the things intended to go through that process are sprinkled with water, more or less, according to the weather and their state of dryness. The starched articles require more damping than those which have none.

1425. **IN IRONING**, the blanket is first placed smoothly on the board, then the flat-iron (see *fig.* 105 D) is heated, cleaned, and used, sometimes employing "a slipper" to keep it from dirtying the linen. The ironing-stove, however, prevents much chance of this; but with irons heated at an open fire it saves a great deal of trouble. Any piece of old cloth serves to clean the iron; and to test its heat, a drop or two of saliva are generally employed, or a piece of useless linen or calico, which shows the burning mark, if the heat is too great. The method of using this iron is too simple, and too generally known, to need minute description. Be careful in ironing lace, ribbons, or any long narrow strips, not to stretch them out of the straight line; but do them slowly, in a straight line, and evenly; and with the point of the iron press out every gather separately. Always iron lace and needlework on the wrong side. In ironing collars, do them first lengthways, and then crossways; and take care not to stretch one half of the collar larger than the other. In ironing a night-cap, do the crown first, and then the border; lastly, the strings and bands. When sheets and table-cloths are ironed, instead of mangling them, they should be ironed double, with a large iron pressed on them hard and heavily. All coloured things must be done with an iron rather cooler than for white clothes, as too great a heat will injure the colours. Iron them always on the wrong side, wherever the manner in which they are made will allow it. When about to iron a dress, if there is not ample space on the table, set a chair in a convenient place to receive the sleeves or any part that may hang down, so as not to let them touch the floor. Begin at the body; next iron the sleeves, and then the skirt, commencing at the top or upper part. A skirt-board is a very useful article. It should be made wide at the bottom, narrowing gradually towards the top. It can be obtained at shops where wooden ware is sold; or a carpenter can be directed to make one. Cover it first with blanketing and then with sheeting, both sewed tightly and smoothly over it. This board is to slip into the skirt of the dress, which may thus be ironed without a crease. Puffings or gatherings in the sleeves should be folded or creased in half, along the middle, and ironed out like a flounce or ruffle. In ironing petticoats, double them from the two sides, and not behind and before; as that will make a fold down the front which will stand out awkwardly when worn. When ironing a shirt, begin at the bosom; then do the collar, then the sleeves, and lastly the back. A small board, on a similar plan to that recommended for the skirts of dresses, will be found very useful to slip under the bosoms of shirts when ironing them. Whenever a thing is begun, iron it as fast as possible (provided always that it is done carefully), and avoid quitting the table while the article is unfinished; for if it is left there is danger of its becoming so dry that it will be impossible afterwards to iron it smoothly. The heat of the iron should always be ascertained before it is used, by trying it on some old useless linen; but if by neglect any linen should be scorched, the discolouring should be removed immediately (see next paragraph).

(*a*) TO RESTORE SCORCHED LINEN.—If linen has been scorched in ironing, and the mark has not gone entirely through so as to damage the texture, it may be removed by the following process:—Take two onions, peel them, slice them, and extract the juice by squeezing or pounding; then cut up half an ounce of white soap, and two ounces of fuller's earth, mix with them the onion-juice and half a pint of vinegar. Boil this composition well; then spread it, when cool, over the scorched part of the linen, and let it dry on. Afterwards wash out the linen.

(*b*) THE ITALIAN-IRON (*fig.* 105 G) is employed to iron all large frills with full round plaits, each of which is placed upon the end of the iron with a finger and thumb of both hands, and slightly moved from side to side at the same time.

(*c*) THE FRENCH-IRON (*fig.* 105, F) resembles an oval mushroom in shape, and after being heated in the ironing-stove it is placed upon the board, and then the lower parts of the insides of sleeves, and similar articles, are held in the two hands, and strained smoothly over it. It is intended for such parts as cannot be well ironed with the flat-iron on the wrong side, and which would not look well if ironed on their right side, on account of their being worked or embroidered.

(*d*) THE GAUFERING-IRON (*fig.* 105 E) consists in a pair of light tongs, by means of which small frills are fluted, presenting an appearance somewhat resembling the large ones ironed with the Italian-iron; but much smaller and more neat. The frill, wrong side upwards, is held on the edge of the ironing-cloth with the left hand, and then the right, taking the gaufering-iron, properly heated, seizes hold of the frill well in the gathers with the left blade under and the right over it, after which, with a slight twist from left to right, two flutes in opposite directions are made by one action, the fingers of the left hand pressing the adjacent part of the frill against the cloth, and thus resisting the twist of the iron, and causing it to have a due effect in smoothing and rounding the flutes. As these irons cool very rapidly, two or three must be kept heated, placing them on the ironing-stove.

(*e*) THE CRIMPING MACHINE (*fig.* 105 H) is intended to crimp frills rapidly, when aided by heaters inserted as in an Italian-iron. The two grooved cylinders are rotated by the handle; and in using the machine a frill, or even a plain piece of muslin, drawn between their teeth, while it is in a damp state, and after being starched on the other side, comes out well crimped, and presents a much more even and regular appearance than if the process was done with a small knife in the hand, which is the simple substitute for the machine.

1428. MANGLING is adopted for things without irregular make, such as sheets, table-cloths, napkins, pocket-handkerchiefs, &c. Those things which have buttons, as drawers, are very apt to have them broken in the mangle, and, therefore, by many people are kept out; but if the mangling cloth is pretty thick they will generally escape. The mode of using this machine is partially described at paragraph 1417. The art consists chiefly in laying the clothes smoothly upon the cloth, and in arranging them in such a way that those of equal substance shall come together, so that the surface shall not be rendered irregular. Most articles are folded two or three times, and look better when so arranged than they do when put in the mangle in single folds. Beyond this, it is only necessary to roll them evenly about the rollers, and lay them in the mangle.

SUB-SECT. B.—CLEANING.

1427. MANY ARTICLES will not bear washing in the ordinary way, in consequence of their peculiar texture or colour; such as silk ribands, crêpe, and some similar fabrics, which will be here alluded to *seriatim*. The following is an admirable application, which has a wonderful effect in restoring silk fabrics, and ought to be universally known. I am not aware of its chemical composition, but I can answer for its success:—

1428. BENZINE-COLLAS, sold in bottles at 1s. 3d. and 5s. each (to be had of all the respectable chemists throughout the United Kingdom and the colonies, and of A. Stringer, Depot, 61, Piccadilly, Manchester). It destroys all spots produced by greasy substances, such as oil, butter, suet, pitch, tallow, new paint, grease on furniture or clothes, caused by the friction of the hands or the head; on all kinds of silks, satins, ribands, furs, velvets, or other fabrics, whether valuable or not; and it improves the lustre without injuring the most delicate colour. The smell, which is not disagreeable, is rather strong when used, but it disappears in a few minutes without leaving any traces. Benzine is also used for cleaning gloves, without changing the colour; to dilute colours mixed with oil; also to wash painter's brushes (for the last purpose nothing can be compared to it); and to remove all spots from paper. Benzine is the only liquid which is capable of removing all greasy spots from pictures, drawings, plans, and precious papers. This liquid can be kept for years without losing its good qualities. Benzine is a certain preventative of moths in furs.

(*a*) *Directions for Use.*—Place a piece of linen of several folds on a table to act as a sponge in absorbing the benzine as it penetrates, and stretch the article greased on the linen, taking care to remove any dust; then take a piece of cotton or flannel, dip into the benzine and rub the soiled part well, after which dry with blotting paper or fine linen, and keep moving the linen underneath. The benzine ought to be applied in a circular direction, and care must be taken not to leave off until the liquid evaporates; then expose the article to a good current of air. It is not necessary to unstitch the seamings to remove any spots.

(*b*) *To Clean Kid Gloves.*—This is a simple operation, easily effected. Place the glove upon a clean piece of paper, or a hand of wood, and rub it with some cotton saturated with the benzine. The application of the benzine in the cleaning of gloves, is one of the most curious and the most economical, as it can be applied until the glove is entirely worn out, and on gloves of all colours; some gloves retain the odour of the benzine longer than others, but exposure to the air will soon carry it off.

(*c*) *To Remove Spots of Grease from Pictures, Drawings, Plans, and other Valuable Papers.*—Place some blotting-paper under the picture, saturate some cotton with the liquid, hold it on the greasy spot one minute, and dry up with blotting-paper. With a fresh piece of saturated cotton, rub slightly in circles, until the liquid evaporates. It is important to know that the benzine is a neutral body, and has no action on silks or colours. It only dissolves wax and greasy bodies, and therefore can be applied without danger to precious papers.

1429. TO RENOVATE CRÊPE.—To get the creases out, lay it between sheets fresh from the mangle; or, strain it tight, and pass it over the steam of a kettle, keeping it perfectly stiff and smooth till it is again dry.

1430. TO CLEAN SILK DRESSES.—Mix six ounces of strained honey with four ounces of soft soap, then add to it a pint of gin or whisky. The dress must be entirely taken to pieces, then each piece must be spread flat on a table, and brushed over with the mixture, first on one side, then on the other. Use a clothes-brush for the operation, and brush lightly, and always straight down the silk. To rinse the silk, it must be dipped into three different waters, without wringing. Roll each breadth in cloths, then, while still damp, iron it on the wrong side with a cool iron. This will answer for all colours but blue or green.

1431. TO CLEAN BLACK SILK.—To a sufficient quantity of ox-gall add enough of boiling water to make it warm. Spread out the silk on a large kitchen table, and dipping a clean sponge in the gall, go over the whole of the article with it, on both sides. Then squeeze it well out, and repeat the application with the sponge, having added more boiling water to the gall so as to heat it again. Rinse the silk in clear cold water, and repeat the rinsing (changing the water each time) till the last water appears perfectly clean. Then stretch it, and dry it quickly in the air, and afterwards pin it out on a table. To give it the consistence of new silk, dissolve in boiling water a little glue or gum arabic; mix it with sufficient cold water, and sponge the dress all over with it. This must be done on the wrong side. Then dry it, sprinkle it slightly, and roll it up tightly in a towel; let it lie a few hours, and then iron it, taking care that the iron is not too hot, as silk scorches very easily. Unless the silk is of very good quality, it will not be worth while to take the trouble of cleaning it. Previous to cleaning a black silk dress, rip the skirt from the body, and the sleeves from the arm-holes.

1432. To Wash a Black Woollen Dress. Fold it neatly, and put it in a large pan of cold rain water. After lying all night, rinse it out, shaking it up and down, in fresh rain water. When it has dried sufficiently (*i.e.*, remaining damp), iron it; turn the dress, and iron it lightly as you would muslin, *not* damping it.

1433. To Clean and Renovate Coloured Woollens, as broad-cloth, merinos, &c.—If there are any grease-spots, remove them with spirits of turpentine, rubbed in with a coarse woollen cloth, and dried with a clean piece of the same; then take a hard brush, and with soap and water brush every part at all stained or discoloured, drying carefully with a piece of woollen material, and not using more water than necessary. After this, take a sponge, dip it in some stale small-beer, and squeeze it nearly dry, in which state rub the whole surface of the cloth with it, using force enough to make it enter the texture. If any part is very threadbare, the surface may be raised with a teazle-brush, so as to have a tolerable nap again. Lastly, with a cool iron and a board (a tailor's goose is the proper thing), iron all the surface, when a gloss will be given equal to new, if well managed; or too high, if overdone.

1434. General Scouring Spirit.—Pyroligneous ether, one ounce; essence of lemon, three drachms. Mix. Moisten the grease-spot in silk or cloth well with this mixture, and rub till it disappears.

Sect. 14.—Miscellaneous Receipts for Store Articles.

1435. The following receipts for articles to be kept in store will be found generally good of their kind:—

1436. To Loosen Stoppers of Glass Bottles.—Procure two pieces of soft wood, such as deal, and of the size of a common ruler, but with angular sides. Then, taking the bottle in the left hand, press one of the pieces against the left-hand side of the stopper, with a slight tendency upwards; keep this pressure up, and during its continuance tap the stopper smartly with the other piece in the right hand, but at the same time not so strongly as to break the stopper. In a very few minutes every stopper, however firmly fixed, gives way, and with proper care there is not the slightest risk of breakage, the safety depending upon the counter pressure by the left hand. In this way I have never failed, and on one occasion succeeded in removing a stopper from a decanter which had confined half a bottle of wine for more than twenty years, defying the efforts of a great number who had tried their hands.

1437. Hair Grease.—Melt half a pound of lard and six ounces of olive oil in a jar placed in hot water; when nearly cool add about two drachms of essence of lemon, oil of lavender, or any other perfume, and then pour it into glass bottles or earthen pots.

Another kind.—Mix fresh beef-marrow and carefully-prepared neat's-foot or trotter oil in equal proportions, melt in a water-bath and decant, leaving the dregs behind; after which, when nearly cool, the scent is to be added as above, and the whole stirred till quite set.

1438. A Highly-preservative Tooth-powder.—Take of prepared chalk and washed sulphur, of each one ounce; powdered myrrh and armenian bole, of each two drachms. Mix.

Another, but not so Good.—Reduce to an impalpable powder half an ounce each of charcoal and orris-root, two drachms of cuttle-fish bone, and one drachm of myrrh.

1439. Bandoline, or Fixatrice.—An ounce of the seed of quinces to be boiled in three pints of water till reduced one half, then strain it, and add a few drops of any essence to perfume it; keep it in wide-mouthed well-corked bottles.

1440. A Good Wash for the Hair, or Roughness of the Skin.—Take of Belmont glycerine one ounce, oil of rosemary half a drachm, proof spirits one ounce, honey half an ounce, lavender-water half a pint; mix the oil of rosemary with the honey and spirits, and add the lavender-water gradually, shaking them well up; then put in the glycerine, and cork.

1441. To Prevent the Hair Falling off. Apply a little of the following lotion to the roots of the hair two or three times a week:—Spirit of turpentine, trotter oil, of each one ounce, with the addition of thirty drops of acetic solution of cantharides.

1442. To Set Pencil Drawings.—Dissolve isinglass in spirits of wine, and a small portion of it put into water forms a good fixing for pencil drawings. Also, a weak solution of gum arabic in water, as strong as it can be without in the least *glazing* the paper.

1443. To Set Chalk Drawings.—Take

eight ounces of highly rectified spirits of wine, one drachm of camphorated spirits of wine, two drachms of volatile spirits of rosemary, and two drachms of the whitest resin, powdered. The *back* of the drawing to be moistened with this throughout, as it somewhat changes the colour of the paper. The brush had better be well-washed afterwards.

1444. A SCENT JAR.—Gather rose-leaves on a very fine day, and, if you have them, prefer the damask roses. Lay them in a large vessel, and throw in a little common salt to every layer of roses; then of rosemary-leaves, lavender flowers, and knotted marjoram, take two handfuls of each with a few bay-leaves. Add any other sweet flowers approved, or make it entirely of roses. Put in about a quarter of a pound of bay-salt, pounded, one ounce of orris root sliced, one ounce of cloves, one ounce of cinnamon, one ounce of gum-benjamin and storax, and one quarter of a pound of angelica root, sliced. When the ingredients are mixed, cover the jar close; take off the cover when wanted, and the scent will be fine.

1445. RECEIPTS FOR TOILET ARTICLES:—

(*a*) POMADE DIVINE.—Take a pound and a half of beef marrow, put it into spring water ten days, changing the water twice each day; then drain it, put it into a pint of rose-water for twenty-four hours, and drain it in a cloth quite dry. Then add storax, benjamin, cypress, and orris, of each one and a half ounce, half an ounce of cinnamon, two drachms of cloves and nutmeg, all finely powdered, and well mixed with the marrow. Then put it into a pewter vessel with a top that screws on, and over that a paste, that nothing may evaporate. Hang the vessel in a copper of boiling water, and let it boil two hours without ceasing; then put it through fine muslin into pots for keeping, and when cold cover it closely. If a pewter vessel is not at hand, a stone jar, with a paste between two bladders, will do.

Another Receipt.—Take four pounds of mutton suet, one pound of white wax, an ounce and a half each of essence of bergamot and essence of lemon, and half an ounce each of oil of lavender and oil of origanum. Melt the suet, and when nearly cold stir in the other ingredients; the origanum has considerable power in stimulating the growth of the hair.

(*b*) COLD CREAM.—Take a quarter of an ounce of white wax, and shred it into a basin, with one ounce of almond oil. Place the basin by the fire till the wax is dissolved; then add very slowly one ounce of rose-water, little by little, and during this beat smartly with a fork, *to make the water incorporate*, and continue beating till it is accomplished; then pour it into jars for use.

Another Receipt.—Take of best lard one pound, spermaceti four ounces, melt the two together, and add one ounce of rose-water; beating it as above directed.

(*c*) RED LIP SALVE.—Take of white wax four ounces, olive oil four ounces, spermaceti half an ounce, oil of lavender twenty drops, alkanet root two ounces. Macerate the alkanet for three or four days in the olive oil, then strain and melt in it the wax and spermaceti; when nearly cold add the oil of lavender, and stir it till quite firmly set.

(*d*) HUNGARY WATER.—To one pint of proof spirits of wine put an ounce of oil of rosemary, and two drachms of essence of ambergris; shake the bottle well several times, then let the cork remain out twenty-four hours. After a month, during which time shake it daily, put the water into small bottles.

(*e*) HONEY WATER.—Take a pint of proof spirit as above, and three drachms of essence of ambergris; shake them well daily.

(*f*) LAVENDER WATER.—Take a pint of proof spirit as above, essential oil of lavender one ounce, essence of ambergris two drachms; put all into a quart bottle, and shake it extremely well.

(*g*) EAU-DE-COLOGNE:—

Essence of bergamot, 1½ drachm.
Essence of lemon, 1½ drachm.
Essence of orange-flowers, 1½ drachm.
Oil of lavender, 40 drops.
Tincture of benjamin, 1 drachm.
Oil of rosemary, 2 drops.
Proof spirit, 1½ pint.

Or,

Essence of citron, 2 drachms.
Essence of bergamot, 2 drachms.
Essence of cedrat, 1 drachm.
Essence of lavender, ½ drachm.
Essence of orange-flowers, 10 drops.
Tincture of ambergris, 10 drops.
Tincture of musk, ½ drachm.
Tincture of benjamin, 3 drachms.
Otto of roses, 2 drops.
Proof spirit, 2 pints. Mix and filter.

(*h*) FOR SCURF ON THE HEAD.—Bruise a branch of rosemary, pour one pint of boiling water over it, and use it warm every morning. This will do for several times.

(*i*) AROMATIC VINEGAR.—Take of camphor half an ounce, reduce it to powder with sufficient proof spirit; strong distilled vinegar six ounces. Mix.

Another and superior Receipt.—Dissolve two ounces of camphor, two drachms of oil of cloves, eight ounces of rectified spirits of wine, then add two pints and a half of strong distilled vinegar.

(*j*) **Thieves' Vinegar.**—Take of dried rosemary tops and dried sage leaves, of each one ounce, dried lavender flowers half an ounce, cloves fifteen grains, and distilled vinegar one quart; digest for seven days, then press and filter.

(*k*) **Pastilles** (*Common*).—Gum benjamin, one pound; cloves, half an ounce; cinnamon, two drachms; a stick of collanus, and mucilage enough to make the parts stick together. Then make into shapes and dry.

A better Receipt.—Benjamin, two ounces; cascarilla, one drachm; myrrh, half an ounce; oil of nutmeg and oil of cloves, of each fifteen drops; nitre, one drachm; charcoal, one and a half ounce; mucilage, enough to make into a mass; then divide into shapes and dry.

(*l*) **A Remedy for Chapped-hands.**—Glycerine soap, when properly prepared, is a good remedy; but the Belmont glycerine, which is entirely devoid of smell, either plain or scented, is a far better application when rubbed on immediately after washing and before going to bed.

1446. **To Preserve Sheep Skins for Mats.**—Dissolve one pound of alum and one pound of salt in a gallon of water. Put the skin in soon after it is taken from the sheep, and let it soak twenty-four hours. Then nail it on an old door, skin uppermost, till quite dry. Line it with a piece of old carpet after cutting it straight, to prevent the possibility of its greasing the floor.

1447. **Black Ink.**—Take a gallon of rain or soft water, and three-quarters of a pound of blue galls, bruised; infuse them three weeks, stirring daily. Then add green copperas and logwood chips, of each, four ounces, six ounces of gum arabic, and a wine-glassful of brandy.

1448. **Substitute for Eggs.**—The following to be used in place of eggs, when scarce, for plum pudding or cake:—One ounce each of carbonate of ammonia and carbonate of soda dissolved in a pint of water, and kept closely corked. A dessert-spoonful of this fluid is sufficient for a pint basin of pudding, &c.

BOOK VI.

THE NATURAL ECONOMY OF MAN, AS AFFECTED BY HIS ARTIFICIAL HABITS.

CHAP. I.—GENERAL VIEW OF MAN'S STRUCTURE.

1449. In common with all the VERTEBRATA, man consists of a bony *skeleton*, enclosing the most important organs of his body, and supporting those of locomotion; and likewise of *muscles*, to move the parts of the skeleton upon each other, and to perform various other offices; and of *nerves*, to stimulate these muscles and to convey intelligence from the exterior to the internal *nervous centres*, which are still more necessary to existence. A *circulation* of blood, with its apparatus, and that of *respiration*, also will be found to aid in composing the machine; while numerous organs of *digestion*, *absorption*, and *nutrition* keep up the supplies to this wonderful fluid. Besides all these, there are the organs of *sense* and *reproduction*, together with the general envelope of the whole, consisting of the *skin* and *cellular membrane*. It will therefore be necessary to review each of these sets of organs before considering the effect of food, and other external agents, upon them in health, or their management in disease.

1450. THESE SEVERAL ORGANS are made up of various elementary bodies which exist throughout nature, and are met with in our food, either ready prepared to our hand, or in a state which is easily converted by our stomachs, and other parts of our system. Thus it will appear, that all our organs, whether bones, muscles, nervous matter, glands, or cellular membrane, are made up of carbon, hydrogen, oxygen, and nitrogen, together with certain saline substances in addition. These primary elements, according to their varying proportionals, become in the first place the albumen, fibrine, salts, and corpuscles of the blood; and are afterwards converted into the bones, muscles, nervous matter, or cellular membrane; which again become in their turn broken-down and absorbed into the blood, as soon as they are no longer fit for their respective offices. In order, therefore, to comprehend the working of the animal machine, it is necessary to understand it as composed of these primary and secondary elements, the latter of which can only be converted from one into the other by some peculiar principle co-existent with life, and called *vital*, though of its intimate nature we know nothing. But with its aid, we find albumen becoming fibrine, or sugar fat, operations which we cannot imitate, though we can in each case measure, and even put together, their elementary compounds. It will be impossible here, for want of space, to define each particular substance or organ, and much must therefore be taken for granted, both physiologically and in reference to the science of chemistry.

CHAP. II.

DESCRIPTION OF HIS ORGANS AND THEIR FUNCTIONS, AS AFFECTED BY FOOD AND AIR.

SECT. 1.—THE SKELETON AND ITS USES.

1451. THE HUMAN SKELETON may be divided into two portions; one of which comprises a series of cavities for containing and protecting the vital organs, while the other consists of central supports, adapted to the purposes of locomotion, and offering levers for the various muscles devoted to that object. The bony cavities are—1st, the *cranium* and *spinal column*; 2nd, the *thorax* or *chest*, attached to the middle of the spine; and, 3rdly, the *pelvis* terminating it. The bony organs of locomotion are the groundwork of the four extremities.

1452. THE CRANIUM, or skull, consists of a number of bones, eight of which combine together to form a hollow case for the brain, while one of these, together with the upper and lower jaw-bones, the bones of the nose and the cheek-bones, constitute the face. In this part they are developed into several cavities; two of which are called the orbits, and contain the eyes; two, close together, form the nostrils; one, between the upper and lower jaw-bones, the mouth; and one on each side to lodge the small bones of the ear, and otherwise constitute the chambers for the organ of hearing. In the upper and lower jaws, also, are fixed, in bony sockets, the teeth, which are,

IN MAN.

Inch. $\frac{4}{4}$; Can. $\frac{1-1}{1-1}$; Bicusp. $\frac{2-2}{2-2}$; Mol. $\frac{3-3}{3-3}$.

1453. THE SPINAL COLUMN consists of a series of bones, called vertebræ, united together by an elastic material, called the intervertebral substance, and by projections of bone, called processes, connected by muscles and ligaments. Each bone is pierced by a large hole for the lodgment of the spinal cord, and by lesser holes for the passage outwards from that body of the vertebral nerves, a pair of which emerge opposite each vertebra. To the skull the highest vertebra is attached by a very peculiar universal hinge-like joint, which is of a rather complicated nature, and allows the head to be turned, rotated, or bent in all directions. The first seven bones form the neck, the next twelve have a rib attached on each side, and form the back, and, with the ribs and sternum, the chest. Below them again there are five vertebræ of the loins, attached to a continuation of the same character, called the sacrum, in which the spinal cord becomes divided into a bundle of nerves. THIS SACRUM has attached to it on each side some wide and strong bones, which form another cavity for containing several important organs, and called the pelvis. Thus there are three large bony cavities, each composed of a number of bones—1st, the *cerebro-spinal cavity*, containing the brain and its continuation, the spinal cord; 2nd, the *thorax* or *chest*, including within it the lungs and heart; and 3rd, the *pelvis*, protecting the organs of reproduction, &c.

1454. OF THE BONES OF THE EXTREMITIES it is unnecessary to say much, as they are merely the foundation for the muscles which are attached to them, and move the one part upon the other. They are therefore chiefly interesting from their beautiful mechanical contrivance.

1455. BONE, as existing in man, is composed of an animal basis, and calcareous matter; the latter of which may be entirely removed by macerating the bone in diluted muriatic or nitric acid. This leaves a substance of a cartilaginous nature, which when submitted to the action of boiling water for a short time, is almost entirely dissolved away, and there results, on cooling, a jelly of a very dense consistence. This same substance, commonly known as gelatine, may be obtained by long boiling under pressure, from previously unaltered bone, and the calcareous matter is then left in a friable condition. Or, by submitting the bone to a heat sufficient to decompose the animal matter, without dissipating the earthy particles, we may preserve the calcareous matters *in situ*, though in a still more fragile state. The proportion of mineral to animal elements in bones varies greatly, according to the greater or less solidity of each; but on the average they may be stated as about one-third of animal to two-thirds of mineral substance. Gelatine composes nearly the whole of the animal, and lime of the mineral, part of bone; the latter being chiefly in the state of phosphate with a small proportion of carbonate of lime.

SECT. 2.—THE MUSCULAR SYSTEM.

1456. THE MUSCLES are the powers which chiefly affect the various movements taking place in the body, either of one part upon another, or of it as a whole upon the surface of the earth. These movements are sometimes produced by the simple expansion and contraction of hollow muscles, as in the heart, stomach, and intestines, or by means of the attachment of the two ends of a muscle to two separate bones with an intervening joint. All muscles have residing within them a power of contraction, either at the mandate of the will of which the organ is the brain, or at the command of some other part of the nervous system extraneous to that body. The former set of muscles are called *voluntary*, and are those by which we walk, talk, or move our eyes, &c.; whilst the latter, called *involuntary*, are the muscles which move the food onwards in its course, or contract upon the blood in the heart or arteries, and these are entirely independent of the will. Lastly, a third set are sometimes voluntary and at others involuntary, being intended to act of themselves when not called upon by the will, these are the muscles of respiration, and those which expel the various secretions.

1457. THE COMPOSITION OF MUSCLE is of a very peculiar nature, as may readily be supposed from the fact of its possessing the power of contracting the length of its fibres with great force. Under the microscope, the fibres of which muscles are composed may be seen to change their form, and to increase in their transverse diameter, in proportion as they diminish in length. In the different classes of muscles the precise nature and form of these fibres are modified; but in all cases they have a peculiar irritability residing within them by which they are induced to contract on the approach of certain stimuli; such as acids, ammonia, or the nervous power, whatever that may be. It appears that every such contraction occasions a waste or consumption of the material of which the muscle is composed, and this is the point with which we have more particularly to do, since it is to supply it by means of proper food that one main department of domestic economy is established. But besides the absolute muscular fibre, blood properly arterialized is essential to the due performance of muscular contractions, and apparently this is not only wanted to afford the fibrine of which the fibres are composed, but also to render them sensible to their proper stimulus. At all events they require a liberal supply when they are much used, so that it may be always calculated that a man who exerts himself in any way will require and consume a much larger amount of nitrogenized food than the same individual would in a state of comparative rest. Ordinary muscle is composed of about 23 per cent. of solid matter, the remainder being water; this solid matter being almost identical with the fibrine of the blood, and, like it, containing certain salts, which will be given in describing that fluid.

SECT. 3.—THE NERVOUS SYSTEM.

1458. THE NERVOUS SYSTEM in man is developed to a greater extent than in any other animal, and especially that part called the brain. This is well known to all as the seat of intelligence and of the will, its several component parts being the organs by which it is informed of the proceedings and wants at the extremities of the body, and by which it conveys its mandates to them. But it is with its composition that we have here to do, for like all other organs of the body, it requires a renewal in proportion to the work done; and as the material for the purpose is to be obtained from the food, it becomes, again, essential to know of what nature it should be.

1459. THE PROPORTION OF SOLID MATTER in the brain varies from a fourth to an eighth part, the fluid being in this, as in all other cases, pure water. Of this solid matter about one-third consists of fibrine or albumen, another third is a peculiar fatty matter containing phosphorus in combination with it, and the remaining third is a substance termed osmazome (which is supposed to be a protein-compound in a state of decomposition), and, in addition, certain saline matters.

SECT. 4.—THE ORGANS OF DIGESTION AND ASSIMILATION.

1460. BY DIGESTION is understood the preparation, in the stomach and small intestines, of the food, so as to fit it for absorption into the general mass of the blood. In the animal body, there is a constant death and renewal of parts, proportioned in extent to the energy of the functions at the time. Every action, whether it be the contraction of a muscle, or the secretion of bone or fat, or the exercise of any of the mental faculties, incurs an expenditure of the blood, from which the body is built up, either directly from that fluid or indirectly from some reservoir of material accumulated from it. In order, therefore, to supply this waste, the blood must be furnished with fresh globules, and these are obtained from the food which the appetite of the animal causes him to seek for and swallow. In man, it is taken into the mouth with the aid of the hands, and other artificial means, as knives and forks, spoons, &c.; and when there, it is, or ought to be, *well masticated* and mixed with the saliva; after which it is *swallowed*, and at once passes into the stomach, which in man is a tolerably simple bag, the shape very much resembling the leather bag of a Scotch bagpipe. In the stomach the food is submitted to the solvent action of its secretion (the gastric juice), and also to a peculiar movement effected by the muscular walls of the organ, the purpose of which is obviously to aid in the chemical solution of the food. In process of time, the food becoming dissolved, escapes little by little through the pyloric orifice into the duodenum, being passed on or regulated by that sensitive part, according as it is in a fit state for the purpose to which it is to be applied. When thus properly prepared, it becomes a thin pultaceous fluid, resembling gruel in appearance, more or less coloured according to the nature of the food, and called *chyme*. In this stage of digestion it reaches the duodenum, where it receives the bile and the pancreatic fluid by a small duct, and is converted into a fluid which is composed of a part fit for absorption, and called *chyle*, and into another part which passes off in the shape of *fœces*. The bile is essentially a soap, formed by the union of a fatty acid with a soda base; and, together with the pancreatic fluid, it exerts an emulsifying power over the chyme, by which its fatty particles are reduced to such a state of fine division as to be fit for absorption. As soon as the nutritious portion is thus matured, it is withdrawn from the cavity, and the remainder is passed on through the large intestines until it finally emerges in the state known as *fœces*. The exact amount of food required by the system in a state of nature is indicated by the cessation of hunger and thirst, two appetites with which man is furnished in common with animals, to induce him to exert himself in procuring food. Hunger is referred to the stomach, but of its exact nature we know little or nothing, since it does not depend entirely upon its emptiness, nor in fact upon any one particular cause. The sense of thirst is still more difficult to analyze, and it is referred not to the stomach, but to the back of the mouth. It is produced by any cause which carries off an unusual amount of fluid, or by heating food, or even without either of these, it occurs in common with a feverish condition of the system. In any case it appears to be a sensation implanted to cause a desire for the ingestion of fluid which shall dilute the contents of the stomach, and prevent their too irritating action on its coats, which may be either the effect of rapid absorption to supply waste, or of an originally stimulating character of food.

1461. BY THE PROCESS OF ABSORPTION, the digested food is introduced into the blood-vessels; and this is clearly effected in some way, but the exact method by which it is accomplished is not readily made out. Nevertheless, the fact is undoubted, and the chyle can be seen collecting in the thin and delicate tubes which convey it into the large veins near the heart, while the watery and more simple particles can be proved to pass *at once* into the veins of the stomach and intestines. With this apparatus, however, we need not trouble ourselves; suffice it to say, that the digested food reaches the great vessels very readily, the watery particles and the most simple solutions being taken up at once from the stomach, and carried into the circulation, while the more nutritive materials are submitted to a longer action, and carried off from the lining membrane of the small intestines. This supply of nourishment is required for four several purposes—1st, for the original building up of the machine; 2nd, for the purpose of repairing the waste occasioned by the continual decay of the body in repose; 3rd, to compensate the loss incurred in the active exercise of the muscular and nervous systems; and, 4th, to keep up the heat of the body, by affording materials for combustion in the lungs. The amount required for each and all of these purposes will vary according to the condition of the body, as regards exercise or repose, and external heat or cold; and it is also affected by the age of the individual. Exercise, cold, and youth, all cause a demand for a greater quantity of food of some kind, while the opposite states are marked by a corresponding diminution of the demand. Although this is true in the aggregate, it is not always correct in individual cases, because it is well known that there is a great difference in individuals in regard to the rapidity of the changes which are going on in their organs, and the amount of food which they require for their maintenance: so that in many cases a growing youth will consume less food than an adult, though where numbers are concerned the reverse would always be observed. In this way, then, the veins taking up the greater part of the water, together with the albumen, gelatine, and sugar, and the lacteals absorbing the chyle, or more complicated material, the blood is supplied with renovating matter. But the nutritive materials taken up by the veins are not, like the chyle, carried directly into the circulation, but are first submitted to the action of the liver. All the veins which return the blood from the stomach and intestines converge into a large trunk, which again branches out to supply the liver with blood fit for the secretion of bile. In this course the blood, with its recent additions from the stomach and intestines, is considerably modified in character; and there is reason to suppose that at this stage a change is effected in the albumen, by which it assumes the composition peculiar to fibrine. Fatty matters, also, are here elaborated either from saccharine substances or from albumen, so that in an animal whose food contains no oleaginous materials, the liver has the task of producing them. The importance of the liver may be gathered from these offices, and the injurious effect upon the health, and especially upon nutrition, when it is either torpid or absolutely diseased. But, besides this absorption of food from the mucous linings of the stomach and intestines, there is also another surface capable, to a certain extent, of supplying its place, or of assisting it when diseased or deprived of its aliment: this consists of the skin, and the lining of the lungs, which are capable of absorbing liquids and vapours to a considerable extent, though not so much so as to be worthy of much consideration in a book like this.

SECT. 5.—THE BLOOD, AND ITS ORGANS OF CIRCULATION AND DEPURATION.

1462. THE FOOD having been digested and assimilated to the nature of blood, is now to be circulated through the body, for the purpose of nourishing its parts, and for furnishing them also with materials for the several secretions and excretions constantly going on. But it is first necessary to examine the nature of that remarkable fluid. I have shown that the food is either taken up by the lacteals in the shape of chyle, or by the veins of the stomach and intestines in a more simple condition, and carried thence into the general circulation. The chyle being emptied directly into a large vein near the heart, while the venous part is carried through the liver, and elaborated there, as well as giving out a great part of its contents in the shape of bile. In both ways the blood being supplied with the substances of which it is composed, it now becomes necessary to investigate its exact nature at the time when it is to be used for purposes of secretion, that is, for the whole of the actions going on in the machine. Whilst circulating in the living vessels, it may be seen, under the microscope, to consist of a transparent and nearly colourless fluid, termed *liquor sanguinis*, in which are certain *corpuscles*, some of which are red, and others colourless. But when this blood so composed is drawn from the body and allowed to remain at rest, a coagulation takes place, separating it into *clot* and *serum*. The former of these is composed of a network of fibrine, in the meshes of which the corpuscles of both kinds are involved, whilst the latter is the liquor sanguinis before mentioned, but deprived of its fibrine, which has united to that in the clot. Thus, the blood in the living body and out of it are somewhat differently arranged, though both consisting of the same ultimate elements. This will be seen from the following combinations:—

(*a*) BLOOD IN THE LIVING BODY is composed of—

Fibrine Albumen Saline matters	Forming with water the liquor sanguinis.
Red corpuscles Colourless ditto	Suspended in liquor sanguinis.

(*b*) BLOOD, WHEN COAGULATED, consists of—

Fibrine Red and white corpuscles	Forming the clot.
Albumen Saline matters	Together forming the serum.

(*c*) THE PROPORTION OF SOLID MATTER TO WATER is from 200 to 210 in 1000 parts, made up as follows:—

Albumen, about	70
Corpuscles (red and white) ...	125
Fibrine	2½
Chloride of sodium and potassium	4
Phosphate of soda ... Phosphate of lime ... Phosphate of magnesia Sulphate of soda... ... Phosphate of iron ... Oxide of iron	2½
	204

1463. THE CHIEF USE, in the animal economy, of these constituents, is a matter of importance to our present subject, because upon their relative value will depend the quantity of each kind of food intended to replace them. The *albumen* is the raw material from which are elaborated, during the nutritive process, many, or in fact most, of the substances necessary to existence, and among the rest the fibrine itself. All the albuminous compounds of the secretions, the horny and gelatinous matters of the nails, hair, and skin, the solid parts of the corpuscles of the blood, and the greater parts of the tendons and ligaments are composed of this useful element. The *red corpuscles* appear to be more connected with respiration than with nutrition; and they are chiefly useful in stimulating the muscular and nervous systems to a due performance of their functions. The *fibrine* is the material which is the most completely prepared for organization, and which supplies what is requisite for the formation of the muscular and other fibrous tissues. It differs but very slightly from albumen in chemical composition, and it is said by many chemists that it is impossible to distinguish between the two by analysis; but in physical character there is the peculiar addition to fibrine of its tendency to coagulate as soon as it is removed from the body, while albumen requires a temperature of 150 degrees to effect the same change. This new feature appears to be owing to some vital addition with the nature of which we are unacquainted, and which our senses and chemical tests have no power to grasp. The proof of this is not complete; but when we find this power lost in cases of death by lightning, or any active poison, it is reasonable to suppose that it is in consequence of the effect upon the vitality of the fluid. With regard to the *saline matters*, their use seems to be in part to prevent the decomposition which would otherwise take place, and in part also to supply the mineral materials requisite for the building up and repair of the several tissues and entering into the composition of the secretions.

1464. THE BLOOD, or nutritive fluid thus formed, is carried into the various parts of the system by the organs of circulation. This movement answers various purposes, the chief of which is to furnish a supply of nourishment to all the tissues, by which they are enabled to live, and, in some cases, to pour out their proper secretions. The former of these functions is called nutrition, and in its exercise different materials are drawn from the blood, according to the tissue to be repaired. Thus, the nutrition of muscle, requires fibrine; that of the nerves requires fatty matter, together with phosphorus and albumen; while the bones demand gelatine and earthy salts, the former being, like fibrine, very similar to albumen. Among the secretions the same remark applies: thus, the bile removes the fatty matter, and other elements peculiar to it; the urine takes off urea and some saline matters; and the milk, when such a secretion exists, separates albumen, sugar, and fat. In this way, the various portions of the blood, when returning from the organs to which they have ministered, have undergone very different changes by these nutritive and secreting processes, according to the nature of each organ supplied; and if the same portion of the circulating fluid were constantly transmitted to each organ and returned from it, it would be wholly unfitted for its office; but by the general mixture in one common centre (the heart and lungs), this change is prevented, and the whole mass is preserved in its regular and healthy condition, some organs serving to remove certain noxious matters, while others supply what is wanted; but each acting upon a portion to such an extent, as to serve for the whole mass. Such is the primary object of the circulation, namely, to carry to every part the blood in a pure state, and return it again to a central organ; and being also mainly useful in mixing the whole into a properly prepared and average proportion of materials.

1465. IN THE DEPURATION OF THE BLOOD, the liver and kidneys, as well as the skin and the mucous membranes generally, take an active part; but the chief organs employed in this process are the lungs. In the passage of the blood through the body, it has changed its colour and composition, being converted from arterial into venous blood, and having absorbed a considerable quantity of carbon, obtained during the decomposition of the tissues. To extricate this is one of the purposes of the respiratory process; another being to maintain the proper temperature of the body, especially when in a state of rest. It is known, that every muscular action develops heat in the muscle contracting; and it is believed that in every change of tissue the same effect is produced, though in a less degree; but this is not sufficient at all times, and if it were not for respiration the body would frequently sink below the temperature at which it can maintain its vitality. But the function of respiration has for its object, not merely to extricate the carbonic acid which is generated in the system, but likewise to introduce the oxygen which is required by that acid; the proportion of oxygen in the tissues, and in the combustible materials of the blood, not being sufficient for this purpose. Hence, it is not enough that the carbonic acid should be removed, for this may be effected in an atmosphere deprived of oxygen; but the latter gas must be offered in a condition fit for absorption; and thus not only is carbonic acid given out and oxygen taken in, but the two actions are effected by the very same process, and at the same time heat is generated by the union of the carbon given off with the free oxygen of the atmosphere. The organs by which this is effected consist of a mass of cells, composing the lungs, on the thin walls of which the blood is exposed to the air in a state of such minute division, as to present a very extended surface, with a thin membrane only intervening.

1466. THE CHEMICAL CHANGE effected in the air expired by the lungs is fourfold; but to understand its nature the composition of our atmosphere must be examined. This consists of 23 parts, by weight, of oxygen to 77 of nitrogen; and as the blood has been already said to be charged with carbon, the following changes in the air expired will be readily understood:—1st, oxygen has disappeared; 2nd, carbonic acid is exhaled; 3rd, nitrogen is absorbed; and, 4th, nitrogen also is exhaled. It was supposed by Liebig that the carbonic acid was wholly formed by the union of carbon and oxygen in the lungs, just as it takes place in our fire-places; but this is now shown to be incorrect, and it is proved that a larger proportion of oxygen is absorbed than is exhaled in combination with carbon, and that the union with that body is effected almost entirely in distant parts of the body. It is difficult to measure exactly the amount of carbonic acid thrown off during active exercise: but in a state of rest it may readily be collected, and something like a fair estimate may be formed of the average quantity exhaled. It varies greatly, according to the present and previous state of rest or activity, and with the age and sex of the individual, and the temperature of the surrounding air. During exercise, and for a certain time after, and also after a full meal, the amount of carbonic acid exhaled is greatly increased, while, on the other hand, it is proportionably diminished during sleep. Thus, a person who was excreting 145 grains of carbon per hour while fasting and at rest, excreted 165 in the same time after dinner, and 190 after breakfast and a walk, whilst during sleep the amount was only 100. It may be assumed that a healthy adult taking a proper amount of severe exercise will exhale ten or eleven ounces of solid carbon per day from his lungs and skin, or about seven ounces if taking little or no exercise; this amount must therefore be provided for in the food over and above the quantity passing off in the fæces and urine. This will give about twenty-two cubic feet of carbonic acid gas in the one case, and fifteen in the other, two-thirds of which may be calculated as excreted from the lungs. It is found that if atmospheric air contains carbonic acid gas, this excretion is retarded in a remarkable manner; and yet the evolution of heat continues, and is even increased in amount, proving that this action is not due to the process going on in the lungs, but to the same taking place in the skin and other organs. With regard to the absorption and exhalation of nitrogen, a great deal is at present mere theory, and cannot be proved; but still there seems strong ground for believing that in certain conditions this gas is given out, while in others it is absorbed. Thus, animals which are either starved or fed upon unaccustomed food are shown to absorb nitrogen, and this is especially the case with hybernating animals, while in the usual and healthy state it is given off to an appreciable extent; but this action has nothing to do with our present subject, and may, therefore, at once be dismissed.

1467. THE CHANGE IN THE BLOOD is next to be considered. I have already remarked that it was supposed by Liebig that the blood as it arrives in the lungs is charged with carbon, which, *while there*, is united with oxygen to form carbonic acid gas, giving out heat in the process. I have also shown one reason disproving this assumption, namely, that there is a positive disappearance of oxygen greater than sufficient to unite with the carbon, and which must be actually received into the blood; but besides this, the fact may be adduced that cold-blooded animals may be made to breathe in hydrogen, and during that time they still exhale carbonic acid gas, which must be the result of oxygen previously absorbed into the system. In addition to these facts, the two kinds of blood, on being analyzed, are found to contain different amounts of each gas, arterial blood losing about one-third of its free oxygen to unite with a corresponding amount of carbon in the form of carbonic acid. This is shown by the experiments of Magnus, who asserts that the two kinds contain the following proportions:—

	Art. Blood.	Ven. Blood.
Carbonic acid ...	62.3	71.6
Oxygen	23.2	15.3
Nitrogen	14.5	13.1
	100	100

It appears tolerably certain, that a part of the oxygen imbibed in the lungs is employed to oxidize the matter set free by the decomposition of the solid tissues, whilst another part combines with fat, sugar, starch, &c., existing in the blood, and composed of carbon and hydrogen in such proportions as to form with the oxygen, carbonic acid, and water.

1468. THE HEAT necessary for maintaining life and health in man ranges from about 98 to 100 degrees; the variations being dependent in part upon the external air, and in part also upon the general condition of the body as to repose and activity, the period of the day, and the time that has elapsed since a meal. In the vegetable kingdom it is proved that an evolution of heat takes place during nutrition, accompanied by the union of carbon with oxygen, and in the active stages of flowering and germination this is very perceptible. Upon examining the condition under which heat is given out by warm-blooded animals, we find essentially the same process to be going on. Wherever the temperature of the body is maintained at a regular standard, we find a provision for exposing the blood to the influence of oxygen, and also for liberating its carbon, and in every case there is a proportion maintained between the amount of heat evolved and that of the carbonic acid generated, as is readily proved by experiment. The carbonic acid thus thrown off by man is partly derived from the continual change or destruction of the tissues, and partly from those ingredients in his food which are free from nitrogen, such as sugar, starch, and fat. As already remarked, it is more than doubtful that this change takes place in the lungs, being in all probability effected in the various organs of the body; nor is the precise mode of union between the carbon and oxygen understood; but the fact is nevertheless clear, that it does take place somehow and somewhere, and that in the act heat is evolved. But besides this agency in the production of heat, there is reason to suppose that hydrogen, in uniting with oxygen to form the water which is so largely exhaled from the lungs and skin, also generates heat; and this theory is in some measure supported by the fact, that infants and young persons perspire *when at rest* much more freely than adults, and at the same time generate heat to a correspondingly greater extent. This secretion from the skin is at all ages the chief means of regulating the temperature of the body, and preventing its rising above the proper degree, or blood-heat, whether from internal or external causes. In either case, the fluid poured forth is immediately converted into vapour, and in this act renders latent a large quantity of sensible caloric.

SECT. 6.—THE ORGANS OF REPRODUCTION, INVESTMENT, AND SENSE.

1469. These several organs, though highly interesting to the physiologist, are of no further importance to the economist than as each and all demanding a greater or less supply of nutrition through the blood. Hence, it will be readily understood that in the growth of the child, when the bones as well as the skin are rapidly increased in size, a large quantity of gelatine is required; and, as already observed, that substance is so nearly allied to albumen as to be with difficulty distinguished from it by chemical processes, so that in point of alimentation the same kinds of food which supply the one will afford the other without difficulty. The organs of sense do not call largely upon the nutritive sources, but those of reproduction demand enormous amounts, as may be readily understood. But as the new parts to be built up are similar to those of the mother, it is only necessary to consider that she requires an extra supply of such kinds of food as will suit her own ordinary state. It is, however, a great mistake to introduce into the system of the pregnant female large quantities of highly-carbonized food, such as fermented liquors, or even sugar and oily matter. It must be remembered that she is feeding two beings, but *that one only is burning carbon in oxygen*, because there is neither the wearing down of muscle nor any secretion or respiration going on in the fœtus, and, consequently, there is a necessity for less rather than more carbon in the food of the mother. It is from this reason that pregnant women so often complain of heat, and especially those who indulge in carbonized food, the sensation being caused not by any actual increased evolution, but by the overflowing amount of carbon accumulated in the tissues. On the contrary, those who live upon meat and bread, which at other times might be considered heating, are comparatively cool and comfortable.

SECT. 7.—ON FAT.

1470. FAT is deposited in the cellular membrane, and sometimes among the muscular fibres, in order to lie there as a store of combustible material in case of a failure in its supply in the shape of food. It is formed almost entirely of the non-nitrogenized constituents of our food, the only part containing nitrogen being the cellular membrane in which it is deposited. Hence, it is of no direct use in keeping up the muscular fibres in a state of vigour, though indirectly it does so by supplying carbon for other purposes; but it is intended chiefly as a reservoir of heat when required. On the other hand, the destruction and renewal of muscular fibre calls for carbon united with hydrogen, nitrogen and oxygen, and hence the supply of the non-nitrogenized materials necessary to form the fat is partially cut off. In this way, therefore, on the one hand, rest is important to the due storing up of fat; and on the other, fat when stored up is made subservient to the wants of the muscular system, by taking the place of other particles of carbon united with hydrogen, which are thus set free to effect that purpose.

BOOK VII.

ON THE MAINTENANCE OF HEALTH BY THE PROPER COOKING OF GOOD FOOD.

CHAP. I.—ON FOOD; ITS NATURE, USE, AND ABUSE.

Sect. 1.—On the Effects upon Man of the Various Kinds of Food Used in Great Britain.

1471. **The Varieties of Food** which have been described in Book IV. are all, more or less, employed in Great Britain, and may be considered as comprising the full diet-roll of the country. It is now necessary to examine their effects upon the human system, and the comparative worth of each, as well, in point of absolute efficiency, as of cost-price. But it is impossible to do this with any thing like certainty, because of the different circumstances connected with age, sex, temperament, and habits, affecting individuals, and even the same individual at consecutive periods of his life. All, therefore, that can be attempted is to calculate the average quantity of solid food, of the best mixed kind, required by adult men leading active lives, and then to consider how near any other kind approaches to this in supporting the full vigour of the system. In this estimate it is assumed, that in Great Britain an active adult male will consume about two pounds of solid food, consisting of bread, cheese, meat, vegetables, and milk; while a healthy female will not require more than a pound and a half, the average consumption of the two being one pound and three-quarters per head, daily. In all cases, therefore, when a larger quantity than this of any article is required by healthy individuals, it may be considered that it is not of the average degree of nutritive value; and, on the other hand, when a less amount is sufficient, it is then, by the same rule, above the line. In support of this calculation, the diet of the navy may be adduced, which is notoriously on a most liberal scale, and intended for very robust and hard-working men, exposed to all weathers. It consists daily of one pound of biscuit (or one pound and a quarter of soft bread), with one pound of fresh meat and half a pound of vegetables (or one pound of salt pork and half a pint of peas, or one pound of salt beef and nine ounces of flour, three ounces of suet, and one ounce and a half of currants). In addition to which there is a daily supply of tea, chocolate, sugar, and spirit; and, weekly, a small allowance of spices and oatmeal. If, therefore, it is found that this slight increase above two pounds per day is enough for such men, who are above the average in their requirements, the amount which I have stated may fairly be taken as the average for working-men in general.

1472. **Every Kind of Food** will be useful, in proportion to the nature and amount of the solid matter which it contains, the fluid particles being comparatively inoperative; and in the case of some kinds of vegetables, being also greatly in excess of the solid. But not only is this *quantity* of solid matter important, but its *quality* also must not be overlooked, and in this particular chemical science is not always a sure guide, since there are many substances almost identical in ultimate composition which are yet widely opposed in their effects upon the human economy. Thus, the fibres of wood are composed of carbon, oxygen, and hydrogen, in the same proportions as starch; and yet they are perfectly indigestible, while the latter is as readily converted into nutriment as any substance we have. In the same way horny matter and bones, though readily dissolved by the powers of the dog's stomach, pass through that of man almost unchanged; and yet they are full of nitrogenized ingredients, which, when capable of solution, or after they are dissolved by the aid of water at a high temperature, are of the highest possible value. It follows, therefore, that every substance used as food must be considered under three aspects—1st, as to the nature of its *ultimate elements*; 2nd, as to the *proportion of solid matters* contained in it; and, 3rd, as to its *digestibility* by the *human stomach*.

1473. **The Chemical Composition of the Solids** varies in many particulars, but chiefly in the presence or absence of nitrogen. Almost all articles of food contain the three elementary substances known as carbon, oxygen, and hydrogen, together with more or less of mineral matter, in the shape of salts or earths; but a certain number of other kinds of aliment contain, in addition, more or less of nitrogen or azote; and hence these two divisions are distinguished, as—1st, non-nitrogenized or non-azotized articles; and, 2nd, nitrogenized or azotized—the terms, *nitrogenized* and *azotized* meaning one and the same thing, whilst the term *protein compound*, which is commonly confounded with them, is by physiologists confined to that exact condition or proportion of nitrogen with carbon, oxygen, and hydrogen, which is capable of being converted into albumen, fibrine, or casein in the process of digestion.

1474. THE AZOTIZED COMPOUNDS are required for the repair of the muscular tissue, and for the nutrition of the body generally, and consequently a proper amount of them must be obtained, or the machine will not be maintained in a state of health, nor will it be kept alive without a certain proportion of them. The list of azotized articles of food includes not only many animal substances, as albumen, fibrine, casein, &c., but also some few vegetables, such as the grains of corn, the seeds of leguminous plants, cabbages, mushrooms, &c. As a consequence, therefore, of their containing nitrogen, all these are specially calculated to support the muscular powers, and to keep up the supplies necessary for the general nutrition of the body; and in whatever form they are introduced into the stomach they are capable of being converted into the particular material required. So that by the aid of the digestive powers wheaten bread is as capable of forming muscle as flesh itself, containing, in fact, a vegetable albumen identical in composition with that of the animal kingdom. But some other azotized materials are not found already elaborated in the vegetable kingdom—as, for instance, gelatine; and though this may be manufactured in the animal economy out of vegetable substances, yet there is reason to believe that if it is presented to the stomach ready-formed it is more easily applied to the purposes of nutrition, and consequently gelatine, or, in common language, jelly, is a very valuable aid to the food of weakly or invalid persons, though it is ascertained by experiment that by itself it will not support life. It is also doubly useful in this state, because it is at once absorbed by endosmose from the lining of the stomach and intestines without any necessity for the process of digestion and assimilation—an act which, of itself, requires an expenditure of vital power.

1475. THE NON-AZOTIZED COMPOUNDS, used as food, are met with in great abundance in the vegetable kingdom, though there are few vegetables which in their natural state are wholly deprived of nitrogen. But the manufactured articles of food commonly known as arrowroot, sugar, oil, and some others, are composed of carbon, hydrogen, and oxygen alone, and are chiefly used in supporting the respiratory process, and thus maintaining the temperature of the body. Among the compounds known as sugar and starch the amount of oxygen is only sufficient to form water by its union with the hydrogen contained in them, and thus the carbon is at liberty to combine with the oxygen introduced through the lungs, forming carbonic acid, and giving out heat. Again, in the oily matters used as food, the proportion of oxygen is so small that they contain a large surplus of hydrogen as well as carbon, ready to be burned off in the system by union with oxygen obtained from the air. It is generally believed that the most simple of these non-azotized compounds, as sugar and starch, are carried off by the respiratory process within a very short time after they are introduced into the system, while the oily matters which are taken up by the lacteals, and require a greater amount of assimilative power, are not so readily brought into use, though quite as efficacious when properly prepared. When the amount of respiratory or non-azotized matter is too small for the heat-producing office, a larger amount of azotized materials must be employed to supply its place, in which there is a great waste. Thus, supposing 100 grains of oil to develope a certain amount of heat, then, in order to accomplish the same effect, 240 grains of starch must be used, or 249 grains of cane-sugar, 263 grains of grape-sugar, 266 grains of proof spirit, and 770 *grains of fresh lean meat.* Alcohol belongs to the respiratory class, *and if properly diluted* it may be rendered very serviceable when there is a deficiency of heat-producing material, or when the surrounding air is so cold as to call for an extra supply. But if employed in hot climates, or in addition to food already abounding in carbon and hydrogen, it is injurious, from its affording more of these elements than is wanted by the system.

1476. IT IS THUS CLEAR that in man, as well as in all other warm-blooded animals but the carnivorous tribes, a mixture of azotized and non-azotized substances is required for his support. Nature has taught him to supply the wants of his system in the most complete manner, as far as general principles are concerned; and all that art can do is to direct him in his search for those particular articles of food which are most readily obtained, or most easily digested and assimilated to his own wants. No substance is more extensively used than bread, either made of wheat, Indian corn, or rye; and there is none met with throughout the world, upon which alone man can subsist for any length of time without injury to health, excepting, perhaps, oatmeal porridge, which indeed so closely resembles bread in its composition, as to be almost identical with it, and milk, which is still more adapted to support life, but is chiefly intended for young animals by nature. With the addition of a moderate quantity of butter, the heat-producing power of bread is rendered quite sufficient to meet the wants of even our coldest winters; while, for the purpose of affording additional muscular support, flesh, albumen, or milk containing casein, must be supplied, together with gelatine in the shape of soups or jellies. But when bread forms a principal article of diet, unless the individual is taking a great amount of exercise, the regular use of meat in large quantities should be cautiously indulged in, being disadvantageous both to the pocket and to the health. On the other hand, when rice, potatoes, or any other vegetable substances almost wholly free from nitrogen, are the chief articles of diet, either an enormous bulk must be digested in order to obtain a sufficient supply of nitrogen, and to the great waste of the carbon and hydrogen, or else some material containing a large proportion of nitrogen must be added, such as eggs, milk, or flesh. Lastly, the oily kinds of food are chiefly adapted for those who live in very cold climates, and require an extra supply of heat, and who are consequently led to devour train-oil with the greatest avidity. It is said that the Esquimaux will devour thirty pounds of blubber at a meal, and as it is slowly digested they are enabled to go for several days without another supply, and in the interval to keep up a temperature equal to their wants when exposed to their severe climate.

1477. **The Relative Proportions** of azotized and non-azotized substances in our ordinary articles of food are here appended, on the authority of Liebig; the non azotized being calculated as starch:—

Article of Food.	Azotized or Blood-making Materials.		Non-azotized or Respiratory Materials.
Veal contains	10	to	1
Hare	10	,,	2
Beef (lean)	10	,,	17
Lentils	10	,,	21
Horse-beans	10	,,	22
Peas	10	,,	23
Fat mutton	10	,,	27
Fat pork	10	,,	30
Cow's milk	10	,,	30
Human milk	10	,,	40
Wheat-flour	10	,,	46
Oatmeal	10	,,	50
Rye-flour	10	,,	57
Barley	10	,,	57
Potatoes (white)	10	,,	86
Ditto (blue)	10	,,	115
Rice	10	,,	123
Buck-wheat	10	,,	130

In this table it must be remembered, that several of the items are somewhat different from those used in this country, as, for instance, veal, which in Germany is almost wholly devoid of fat, while in this country it is often sold with a considerable quantity of that heat-producing article. The same will apply to beef, which, as here sold, will in its composition be more nearly like that of fat mutton in the above table. Still it will show the relative properties in each kind of food; and the observer may class them pretty nearly as they are here given in point of azote. It will thus appear that it will take 133 lb. of rice, or 125 lb. of blue potatoes, to supply as much muscular tissue as 27 lb. of lean beef, or 37 lb. of fat mutton, or 40 lb. of cow's milk, or 56 lb. of wheat-flour, or 60 lb. of oatmeal; and, consequently, the hard-working man, who chiefly expends muscular tissue, must make a double calculation;—1st, what substance will supply him with the azotized materials which he requires, joined with a sufficient amount of respiratory matter; and, 2nd, will that substance give it him at the lowest possible price? It is obvious that the less waste the better—that is to say, that the two classes of substances should, in theory, be exactly proportioned to the wants of the system, and that all beyond this is a waste of digestive power, and of material also; but in practice it sometimes happens that the poor man, being limited in his supply of money, can lay it out to more advantage by purchasing a larger amount of articles theoretically extravagant, but which, though wasting a part of their elements, will still afford him more of what his system demands. Thus, in round numbers, the quantity of potatoes equivalent to bread and meat are respectively four, two, and one—that is to say, that four pounds of potatoes will go as far in affording muscular tissue as two pounds of bread or one pound of meat; and whenever this quantity of potatoes can be purchased for less money than two pounds of bread or one pound of meat, which is almost always the case, they may with advantage be substituted for the two last kinds of food in an economical point of view. But as it is well known that man cannot long live upon one article of diet, and as the four pounds of potatoes would be too bulky for the stomach, and would give the excretory organs too much to do in getting rid of their superfluous carbon and hydrogen, it follows that, in point of health, a diet composed entirely of this root is prejudicial to health in all ways. When mixed, however, with bread and meat, nothing is more wholesome or more economical than the potato; and it is only when its use is carried to excess that it should be condemned as injurious to mankind.

1478. BUT THE MINERAL ELEMENTS OF FOOD are no less necessary than those we have been hitherto examining; for, though the chief *bulk* of the body is built up from the four elementary principles which have been investigated, yet we shall find that all food capable of long sustaining life must contain the mineral salts which are met with in the blood. An alkaline condition of this fluid is absolutely essential to the performance of its functions; and every acid which enters it must at once be neutralized and carried off in the secretions or excretions. Thus, the vegetable acids are speedily oxidized in the blood, and become converted into carbonic acid and water, and then appear as alkaline carbonates, while uric acid becomes converted into urate of ammonia, and is discharged with the urine. The mineral ingredients of food are either phosphates and sulphates alone, as in flesh, grain, and pulse, or these salts mixed with silicates and carbonates, as in green vegetables. These are partly soluble and partly insoluble in water; and as the soluble salts of the ashes of the blood are the same as those of urine, and since we can affect the nature of the latter fluid by a change of diet, we may not only arrive at the soluble salts of the blood from examining those in the urine, but we may modify them also by changing the diet. Phosphoric acid and the phosphates, as well as other mineral ingredients, are absolutely necessary to effect the vital changes constantly going on, and hence we see the importance of supplying them in due proportion and admixture. This is the reason why boiled flesh (or fibrine) alone will not support life; and why yolk of egg, cheese, and similar matters, likewise fail when used by themselves. The pure fibre of meat is certainly rich enough in phosphoric acid, but it has lost the alkalies in the juice; the yolk of egg is still richer in the same phosphoric acid; but it, likewise, is deficient in alkali, which is confined to the white. In cheese, again, the same division of these matters has taken place, the whey retaining all the alkali contained in the milk. Hence it is that salt is so usefully added in unusually large proportions to boiled meat, eggs, and cheese. It is for these reasons, that in all boiled meats the broth ought to be eaten with them, or, at all events, used as soup on the alternate days, the system being content to wait for that short time for the supply of the saline materials, especially if common salt is eaten at the same time, as is almost universally practised.

1479. GREEN VEGETABLES contain these saline ingredients in large proportion, so that they may be advantageously used with boiled salt-meat in which the alkaline juices have been lost, both in the salting and in the boiling process. Hence it has been found by experience, that carrots, parsnips, turnips, and greens are advantageously mixed with boiled beef, which without their addition, or some substitute for them, will in a short time produce that horrible disease known as scurvy. It is not, however, sufficient in such cases to boil these vegetables in large quantities of water, and then to eat them without their juices contained in the water; but they should be steamed in small quantities of water, and this should be taken with them, in order to extract all their virtues, and render them available.

1480. THE USE OF TEA, COFFEE, AND COCOA has of late years become almost universal in this country; and as they all contain a principle nearly identical with each other, and acting in the same way upon the system, it is right to consider them as one and the same (see page 284). They all seem to promote the natural vital changes, and especially muscular and nervous action. It is true, that the precise effect produced cannot be watched; but it is accompanied with a sense of refreshment attended with new vigour, which is very peculiar, and so captivating, that it is very rare to find individuals giving up the use of one or the other of these articles after they are once accustomed to them. It is, indeed, asserted that no nation has ever ceased to take either tea, coffee, or cocoa, after once taking to them as a general beverage; and this is, perhaps, the highest character which can be given of any article notoriously free from injurious effects upon the morals. A nation may easily be led wrong, by acting on the passions or appetites; but when it is led in any other way, it may reasonably be maintained that the mode of temptation is not only free from harm, but in all probability is in itself good.

SECT. 2.—ON THE ABUSE OF FOOD.

1481. In the preceding section it has been shown that a diet of a mixed kind is best adapted for maintaining the health of man, and that the ingredients of which it is composed should be varied from time to time, and also according to the age of the individual. Thus it is right to use animal as well as vegetable food in moderation, and in proportion to the demands of the system; but more than this is an abuse, and should not be encouraged, as it will surely, sooner or later, produce mischief in some organ or organs. Even alcohol is required under certain circumstances where a great expenditure of heat is going on, and at all times may be indulged in without injury if properly diluted, and in moderate quantities; though at the same time, in our temperate climate, it is not required by healthy men who can command a sufficient amount of heat-producing solid food. The various abuses of food may therefore be considered as consisting in—1st, *excess in quality;* 2nd *excess in quantity;* and, 3rd, *abstinence from the food required.*

1482. EXCESS IN QUALITY is chiefly the result of too highly-stimulating food; that is to say, it consists in partaking of articles which in themselves are highly proper as containing the desired elements, but in too concentrated a form. When taken into the stomach they produce disorder of it from excess of proper stimulus, just as an exceedingly strong light injures the eyes, although a smaller amount of it is absolutely essential to vision. From this cause strong extracts of meat when taken by themselves, rich creams, strong alcoholic drinks, and other concentrations of otherwise wholesome foods, are sure to cause indigestion, and, in the case of alcohol, injury to the whole system.

1483. EXCESS IN QUANTITY may either be of the whole elements of the food or of part. It is well known that the gastric juice is essential to digestion, and that it is poured into the stomach, not in proportion to the food swallowed, but in exact relation to the demands of the system; so that if these are small, and yet a large meal is eaten, there will not be sufficient gastric juice to digest it, and, as a consequence, a considerable amount of crude and easily-fermented food is passed on, or rejected by vomiting. In either case this produces some disorder of the system; and when habitually indulged in, the effect on the stomach, as well as other organs, is very prejudicial. But besides this bad effect of too great a quantity of otherwise proper food, there is also that resulting from too profuse a supply of either of the two kinds required by the system, and described as blood-making and respiratory. The great and prevalent error in this country is that of eating too much blood-making or azotized matter, whether in the shape of animal or vegetable food, for even in the latter there is too large a proportion to bear mixture with much flesh, as in the case of wheat, peas, or beans. On the other hand, the proportion of respiratory matter may be easily rendered too great, and particularly when strong alcoholic liquors are largely imbibed, as unfortunately so often happens. In this kind of abuse the injury is twofold—first, from the excessive stimulus mentioned in the last paragraph; and, secondly, from the enormous preponderance of respiratory matter. By virtue of the strong attraction for oxygen, alcohol is first oxidized, to the exclusion of the solid food, and even before the absolute and living tissues of the body. If the food is already composed of sufficient starch, sugar, or fat, every drop of alcohol is poisonous to a certain degree; but, on the other hand, when taken with cheese, meat, or eggs, in which there is a large quantity of nitrogen, alcohol in some shape is by no means injurious, unless its stimulating effects are too great from being in a very concentrated form. It is for this reason that our instinct has taught us to take wine or beer with savoury food in preference to sweets.

1484. ABSTINENCE FROM THE QUANTITY OR QUALITY OF FOOD required by the system is just as great an abuse of what is freely offered to us, as the opposite extreme. Thus, it is clearly shown, that man is an animal designed to live upon a mixed diet, consisting of azotized and non-azotized materials in a given proportion. It matters not whether these are obtained from the animal or vegetable kingdom, as far as the effect upon him is concerned. A man may feed as fully, and form more blood, on a vegetable diet composed of peas or beans, than he would do on fat meat. There is no difference, as far as is known, in the power of producing blood, between flesh and bread, if the former is mixed with a proper amount of starch, or oily matter. But there is one reason why flesh is superior to all other kinds of food, for the purpose of supplying the waste of muscular tissue, and that is, that it is the very substance which it is intended to form, and therefore is more readily built up into the animal machine. The proper rule is to obtain the necessary amount of each kind of food in a state as near as possible to that tissue for which it is intended, and avoiding too highly concentrated a form. The instinct of man has always led him to apply this rule, whenever he could; though in many cases, for want of sufficient intelligence, he has been led to confine himself, on the one hand, to flesh alone, as in the case of the American Indians; and on the other, to roots, as in the case of the stunted tribes of the interior of Africa.

SECT. 2.—ON THE RELATION EXISTING BETWEEN THE MARKET PRICE AND THE ALIMENTARY VALUE OF FOOD.

1485. By the former of these terms is understood the cost of any article of food in the regular market, while the latter refers to its good effects upon the body. It will generally be found that these two are pretty nearly proportioned to one another; or, in other words, that mankind have now found out the precise alimentary value of most kinds of food, and have priced them accordingly. Yet this is not always the case, and one great object of the economist in household affairs is to seek out such as are sold below their real value, and use them for their proper purposes. It is a rule generally maintained, that the supply of any article is equal to the demand; but in proportion to the increase of the demand is the price raised, unless the supply is practically unlimited, when the larger the demand the more the price seems to fall. But still it is notorious that whenever it is found out that any well-known article has more useful qualities than have generally been assigned to it, the demand being increased has a tendency to raise the price, and from that time it is no longer beneficially applicable, and gradually again falls out of use. It must be remembered that in several of our aliments as sold in the market there is a large proportion of water, as in butcher's meat, fish, poultry, and green vegetables, including potatoes; while in flour, rice, and other similar articles, the quantity of water is comparatively small. The following table exhibits the quantity of nutritive matter in the ordinary articles of food, as compared with their price:—

COMPARATIVE VALUE OF FOOD IN NUTRITIVE MATTER.

	Nutritive Matter.	Price.		
	lb.	£	s.	d.
100 lb. of Butcher's meat contain	35	2	18	4
" " Baker's bread (seconds)	73	0	18	9
" " Home-made bread (seconds)	80	0	17	8¼
" " Do. do. (brown)	78	0	13	6¼
" " Do. do. (wheat and Indian meal)	76	0	15	7¾
" " Do. do. (wheat and rice)	68	0	14	0¾
" " Do. do. (wheat and potatoes) ...	63	0	15	1¼
" " Rice and sago	90	1	5	0
" " French beans (dried)	92	1	10	0
" " Broad beans (green, but mealy)	81	2	10	0
" " Peas (dried)	93	1	5	0
" " Do. (green)	70 to 78	2	10	0
" " Potatoes...	25 to 28	0	6	8
" " Carrots and parsnips...	14	0	10	0
" " Cabbages	6¼	0	8	6
" " Turnips	6	0	8	6

From this table it will appear, that very nearly in proportion to the amount of nitrogenized matter in the food, and its fitness for digestion, is the price in the market. Thus, butcher's meat stands the highest in price, not because it contains the largest quantity of nitrogenized nutritive matter, but because it is the most digestible of those which are so compounded; and contains, in addition, a liberal supply of those saline matters which are required; it is, therefore, valued at 1s. 8d. per lb. of nutritive matter. Dried beans and peas, on the other hand, which contain about the same proportion of nitrogen (see table at page 434), are only valued in public estimation at 4d. per lb. of nutritive matter; the reason being that they are neither so digestible nor so easily convertible into fibrine as meat, and that they do not contain a proper amount of saline matters. Bread, again, which is composed of these elements in a suitable proportion, sells at 3d. per lb. of nutritive matter and is consequently much cheaper than meat, or even than beans and peas, and very much more so than potatoes, rice, and sago, which, though so much vaunted as a cheap food, are really deficient in every point of view, being actually sold at from 8d. to 3½d. per lb. of nutritive matter, and that of a kind almost wholly without nitrogen. The exact price of potatoes is 3d., and of rice or sago, 3½d. per lb. of nutritive matter. Carrots, parsnips, cabbages, and turnips, vary from 8d. to 1s. per lb. of nutritive matter, and cannot, therefore, be compared in this respect with any of those kinds mentioned above; but from the quantity of saline matter which they contain, they are invaluable adjuncts to meat, bread, and potatoes, and should never be omitted for any lengthened period.

SECT. 4.—ON THE QUANTITIES OF FOOD REALLY DEMANDED BY THE SYSTEM.

1486. This subject has been previously alluded to, and it will, therefore, only be necessary here to repeat in a tabular form the average quantities of each kind of food required by a healthy man taking an ordinary amount of exercise:—

(*a*) AVERAGE DAILY AMOUNT of the BEST KIND of FOOD required by an ADULT MALE:

		s.	d.
Meat (uncooked)	0¾ lb. ...	0	6
Bread...	0¾ ,, ...	0	1¾
Potatoes (or green vegetables) ...	1½ ,, ...	0	1½
Cheese	2 oz. ...	0	1
Butter...	1 ,, ...	0	1½
Milk	2 ,, ...	0	0½
Sugar	1 ,,	0	2
Tea	0½ ,,		
Coffee	1 ,,		
Malt liquor	1 pint	0	2
		1	4

(*b*) CHEAP FOOD, SUFFICIENT TO SUPPORT AN ADULT IN GOOD HEALTH:—

		s.	d.
Bread	1 lb. ...	0	2¼
Potatoes	2 ,, ...	0	1½
Peas or beans	4 oz. ...	0	0¾
Dripping or lard	4 ,, ...	0	2
Cabbage or greens ...	1 lb. ...	0	1
Cheese	3 oz. ...	0	1½
		0	9

This amount of aliment, if properly managed, may be made very tolerably palatable. The peas or beans should be well boiled, and then fried in a part of the dripping with the potatoes and cabbages, which will make a savoury mess. Part of the bread is to be eaten with this, dividing the whole into two meals; and the remainder of the bread, with the cheese, makes the third meal. This diet, with a pint and a half of malt liquor, which, if brewed at home, need not cost more than 1d., will keep a man *accustomed to such fare* in good health; but there can be no doubt that it would disagree with those brought up to the use of meat, fish, and poultry.

(*c*) CHEAP FOOD FOR CHILDREN, SUITED TO THE COUNTRY:—

		s.	d.
Oatmeal	0¾ lb. ...	0	1½
Potatoes and greens...	1 lb. ...	0	1
Milk	1 pint ...	0	1
Treacle	2 oz. ...	0	0½
Bacon	2 oz. ...	0	1
		0	5

The oatmeal should be boiled in water for about half an hour, or longer if very coarse; then add the milk, and this will serve for breakfast and supper with the treacle. The potatoes and bacon make the dinner.

1487. THE ABOVE CALCULATIONS are based upon the absolute amount of food which the human machine demands in order to supply its wants, and makes no allowance for changes required by the stomach, nor for the many other accidental circumstances which will always interfere with the cost. But this will show upon what a small quantity of food health may be supported, and will serve to explain the fact, that large families are often maintained upon sums which by others are considered inadequate to find food for a single individual, not very far removed from them in social position. It is truly astonishing how much is wasted by overfeeding, and how unfortunately it happens that when this practice has long been continued, it is next to impossible to leave it off. But though these limited quantities of plain food are sufficient to support life and health, yet there can be no doubt that by proper management and cookery, the same sums, or very nearly so, which will purchase their rude materials, will suffice to procure much more savoury dishes. Compare a dish of plain-boiled potatoes and salt with the same articles fried and flavoured only with a single herring and a little lard; and even if they are reduced in weight sufficiently to pay for the extras, they will be much more palatable, and also more serviceable to the system. This is merely a single illustration, but many others might be adduced depending generally upon the gratification of the instinctive desire for nitrogenous food. In catering for a man with a strong appetite, it matters little what its nature may be, so that either fish, flesh, fowl, milk, pulse, or mushroom, will serve to afford nitrogen in large quantities, and at the same time act as flavouring matter; but for delicate stomachs, the effect will vary greatly, and the choice must then be confined to such *well-cooked* kinds as are found by experience to afford this nourishment; while, at the same time, they present a proper stimulus to the stomach.

CHAP. II.

ON THE ADVANTAGES OF A PROPER PREPARATION OF FOOD FOR THE HUMAN STOMACH.

SECT. 1.—GENERAL REMARKS.

1488. The following observations from a recent leading article in the *Times* are so much to the point, that I shall extract them *verbatim*. After referring to the amount of ignorance existing among the class of mechanics and servants, in reference to the best modes of procuring the common articles of clothing, &c., the editor goes on to say, "but the great, the fearful shortcoming, is in the science of cookery. Of it they may be said to know nothing; and we fear in that class of life nothing, or next to nothing, is known of it. Of course, the boys have not been taught anything about it, though why they should not be, nobody can explain; and as for the women, only those who go out to service profess to know about it; and in no case is their knowledge available for a poor man's household. If they are engaged in a rich family, they live on the best joints, eat succulent roast and fat boiled meat, and waste on their own, and waste still more on the upstairs table, everything which comes to their hand. They have a notion that there is a divine virtue in being extravagant and thriftless. Thrift and economy they consider mean. Yet a household of this kind, with the full swing of the kitchen and the larder, is too often the sole training that many a woman gets for the duties of a poor man's wife. It should never be forgotten that household service is the only school that many a woman ever passes through, and to many a woman it is a pernicious school. If she has never learned to save in the midst of plenty, she cannot begin to save under the pressure of small means. As she has never had reason for turning small things to account—to make the most of odds and ends—she is often reduced, and reduces her husband, to a recurring vicissitude of one day's feasting and three or four days' fasting, with an intermediate day of scraps. And she is utterly ignorant of the thousand ways of dressing vegetables with a little meat or fish, so as to make the absence of a more substantial dish unregretted. And this happens in a million homes in a country which has, on the whole, the finest fish, the richest and most succulent meats, and produces or imports poultry, eggs, and butter to an extent which precludes their excessive dearness at any season. And while this happens with us, the French peasant, with far lower wages, with fewer materials of food, is making savoury dishes and healthy condiments out of the simplest produce of the field and the moor. Who can wonder, then, that while an English army is half-starved despite numerous appliances and supplies, a French army feeds itself out of the rudest of Nature's gifts? Miss Burdett Coutts and Lord Ashburton, who took the lead which she has so well followed, will have earned the gratitude of the country if they have done nothing more than set people thinking about the amelioration of their cookery, and lead high teachers to consider that the art of feeding is really a science which affects the well-being of some twenty million citizens in England, and may often affect the existence of some quarter of a million soldiers abroad; and our social reformers will do well by following her example, and teaching the people of England that which, to the majority of them, is still a great secret—'What food to buy, and how to cook it.'" No one who is acquainted with the workings of our every-day life in England, among the middle and lower classes, will refuse his cordial assent to these remarks; and few will be able to call upon their experience for instances of much greater knowledge among the mistresses of families themselves. It is true, that almost every housekeeper knows what meat costs, and how many pounds she consumes per week; and, also, the price of bread, and the number of quartern loaves, which she pays for at certain periods; but she does not know the amount of nourishment required by the younger and older members of her family respectively, nor the best kinds of food for each, nor even the best modes of dressing what she fixes upon in her blind and careless choice. It is with the last of these subjects that we have now to deal, and consequently to examine into the relative advantages of—1st, *the proper keeping of food*; 2nd, *roasting and baking*; 3rd, *boiling*; 4th, *frying and broiling*; 5th, *stewing*; 6th, *soup-making*; besides the art and advantages of preparing what are called *made-dishes*, *sauces*, and also *pastry*, *puddings*, and other *sweets*. Prior to these divisions, however, it will be better to dilate at some length upon the duties of the cook in this department—those pertaining to the care of her kitchen, and of the house generally, having been already alluded to at page 222.

1489. THE GRAND PRINCIPLES OF ECONOMICAL COOKERY are universally the same, however they may fall short in practice of ideal perfection. They are—1st. *To render food, as afforded by nature, more digestible by art.* 2nd. *To avoid, as far as possible, any waste of materials in the operation.* 3rd. *To combine with the most nourishing and digestible kinds of food those which shall render them grateful to the palate.* 4th. *To take care and please the senses of sight and smell, as well as those of taste.* And 5th. *To avoid all needless expense in carrying out the above operations.*

SECT. 2.—THE COOK, AND HER GENERAL UTENSILS.

1490. Every cook has constantly to deal with four different elements of calculation, three of which are tolerably constant, and therefore to be depended on, while the fourth is unfortunately somewhat changeable. The first, or constant elements, are *time*, *quantity*, and *quality*; the second being her own *organ of taste* and those of her employers.

1491. TIME is truly a certain and sure element, always to be depended on as a severe but just master. To the *punctual* observer of his laws he accords his favours without measure; and, on the other hand, those who break them are as surely punished by a constant and ever-recurring series of what they sometimes fancy to be misfortunes. As Napoleon could always manage to assemble his troops on a given spot at a given time, from whatever distance they might have been drawn, so the cook, with a good head for her business, can contrive that all her dishes shall be ready at the same hour, by properly calculating the time they will take to dress, and commencing each in turn according to its requirements in point of cookery. If this is neglected, one dish has to wait for another, and is, therefore, more or less injured by delay; and the dinner is postponed so long, that the tempers of those who partake of it are by no means in a condition to allow them to judge impartially of its pretensions to a correct preparation. Punctuality, therefore, is the first thing to be inculcated, and this implies a proper grounding in the elementary principles of cookery, so as to be aware, without trouble and reference to books, of the time which every article requires. If the cook has to look every day for these particulars, she will lose time when most precious; but, still, if she has not the knowledge, she can only gain it by consulting an authority of some kind; and if she is, as she ought to be, a quick reader, she may soon make herself independent on this score. In every case, there should be a clock in the kitchen, or within sight of the cook; and when she is not thoroughly experienced, she should have the aid of a table of the times required for the cookery of the more ordinary articles hung up near her fire-place; which, if she cannot herself write in sufficiently legible characters, should be written by master or mistress.

1492. QUANTITY comes next to time in importance; and it is an element still more frequently neglected by those who consider themselves professed cooks. Few of these people weigh or measure the ingredients which they use, but compound their dishes by "rule of thumb." This is in some cases of little consequence; but for young cooks at all events it is a very foolish plan, since it so often leads to a failure; whilst, for old ones, it ensures an early destruction of their organ of taste, which ought to be husbanded with the greatest care. This is obviously the result, because if dishes are made in the careless way to which I have alluded, they must be tasted again and again, until they satisfy the palate of the cook; while, if they are prepared from ingredients of accurately known measure or weight, they will so seldom vary, that it is hardly necessary to taste them at all, or at all events only once. From constant tasting the palled organ of taste becomes insensible to all but very strong flavours, and the consequence is that dishes are sent to table which call forth complaints from the heads of the house; and these complaints being conveyed to a servant who has no *certain* guide in the shape of an accurate receipt, she is unable to rectify her mistake, and on the next attempt perhaps falls into the opposite error. Whenever, therefore, a cook works by any receipt not her own, she should follow it closely for her own sake; or if she can improve upon it, let her do so, but then *let her set down the exact variation from the original.* In this way she will always have a certain guide; and, though she may lose a few minutes a day in measuring and weighing, yet she may console herself that her hand will last much longer than her palate, and that, by the regular adoption of the practice, she will be able to fulfil her duties for many years longer than she would do if she drew upon her delicate nerves of taste every ten minutes. Perhaps she will say that she does not intend to spend all her life roasting herself, but that she hopes some day to be the mistress of a family. If such is her intention, and she is sure of carrying it out, this argument will not apply; but even then, I should strongly recommend her to wait until she has secured a competency; and, in waiting, to take care of her stomach, for no one is more miserably situated than a cook so accustomed to rich food that she cannot live upon plain dishes, and yet cannot pay for anything else. In every way, therefore, *for her own sake*, the cook should study quantity, and carry out her knowledge in practice, while, for the sake of her master and mistress, she can scarcely ever pass an hour without having recourse to her weights and scales. These must, of course, be provided for her; and if they are to be used as here advised, they must be of the kind shown at *fig.* 109, which should always be on a shelf or table ready for use. If the cook has to take out a pair of scales from a closet or drawer, and set them up, before weighing any article, there can be no wonder that she avoids the trouble. The cost of these scales is from 16s. to 25s., but they soon pay for themselves; and as they weigh anything from one quarter of an ounce to twenty pounds, they serve for every purpose. We all know perfectly well the rudest kinds of scales may be made to answer the same purpose, but it will be found that without making the thing easy, a cook will always shirk this part of her duty; and indeed in every case with servants, unless they have the best tools which can be supplied, they are almost certain to excuse their neglect by laying the fault upon those who will not give them the "proper things" for their business. The various weights and measures will be found given at the end of this volume.

1493. WITH REGARD TO QUALITY, the cook has less to do than with the other elements concerned, unless she is also in the habit of going to market. Still even when she does not purchase the things required in the kitchen, she will be often called upon for her opinion of their quality; and she should then be able to give it to her mistress without hesitation. This, however, requires considerable experience; and if she has not had it, she cannot be expected to be able to guide when she herself requires a leader. In Book IV. the cook, as well as the mistress, will however find ample directions for instructing herself in what is required; but, nevertheless, practice is here of far more importance than the best precepts in the world.

1494. AS A NICE SENSE OF TASTE is the great secret of the first-rate cook, when joined to the observance of the three elements of success already alluded to, so it should be most carefully educated and prized. I have already mentioned that this sense is easily palled or dulled by constantly calling upon it, and that for this reason it should be as seldom taxed as possible. It is well known that even the best judge fails to distinguish port-wine from sherry after a dozen successive tastes of them indiscriminately, when blindfolded and without the sense of smell to aid him. This, therefore, shows how readily the palate is confused, and how necessary it is to husband its powers. But besides this abuse of the sense of taste from satiety, there is also the fact that the taste of every individual is suffering a change, so that we like this year what was perhaps distasteful a few years ago. Hence, the cook requires to consider, when she is drawing upon her own resources, *not only whether her concoction is pleasant to herself, but whether it will please her employers.* She must recollect that her organ and their organs are liable to change in the regular course of events, and dependent also upon the seasons, upon health, and sometimes upon the caprice of fashion. A constant necessity, therefore, exists for ascertaining the degree of success of her efforts, from day to day, and this can only be done either by means of the mistress or of her fellow-servant waiting at table. If the cook can depend upon the latter, the intelligence will be more regularly conveyed; and not only this, but the servant waiting can detect the *general* success or failure of any dish or dishes with even more certainty than the mistress herself, because the latter is influenced by her own palate in judging of others, while the servant is not. It is obvious that a dish may be liked by all but the mistress, yet it would be condemned by the single dissentient, if she were the sole organ of communication with the cook; and in spite of the fact, that if she were aware of her mistake, she would be the last to wish the change made; for I believe most fully, that in nine cases out of ten, the mistress of a family willingly sacrifices her own taste to that of the other members, whether husband or children. Let every cook, therefore, while in health, take care to avoid spoiling her taste by over-use; let her also do all in her power to keep in health, which is absolutely essential to preserve the organ; and lastly, let her on all occasions remember that she is preparing her dishes for a variable and uncertain set of palates, and trim her sails accordingly, by looking out ahead for every change in their likes and dislikes.

1495. CLEANLINESS AND PROPER VENTILATION, AS WELL AS LIGHTING, are no less important than the above essentials; but they merely require to be mentioned in order to secure attention. With regard to the first of them, it will always be inculcated by the employers for their own sakes; but it is no less advisable for the sake of the cook, who, if she neglects it, will never be able to send her more delicate things to table looking well, however palatable they may be; and as the eye very often leads the palate, she will disgust the latter at once. With regard to ventilation and lighting, it is manifest that, if the cook is oppressed with the heat and steam arising from the chief scene of her labours, her bodily health will suffer, as well as her temper; and we all know by sad experience how completely a loss of the last-mentioned faculty ensures the defeat of the best concerted plans. All this has, however, been fully dilated upon at page 152. With regard to lighting, both by day and night, full particulars will be found at pages 119 to 137, with the comparative cost of gas and other means of illumination. A strong light is essential to some departments of cookery, and should always be within the reach of the cook; but for many it is by no means necessary, and only adds, when artificial, to the otherwise sufficiently-high temperature of the kitchen.

1496. THE PROPER COOKING-RANGE, suited to the nature of the establishment, is described at pages 152 and 153, together with the fittings for the back-kitchen; and at page 192, four lists of kitchen utensils are to be found suited to the respective expenditures of £1000, £500, £250, and £100.

1497. THE COOK'S BOOK, is a weekly account kept by her, in small ruled pages, of her disbursements for pot-herbs, or other petty and frequently-recurring items, for which the mistress will not always like to be disturbed. In the country, where there is no shop at hand ready to supply these demands, no such book is generally kept; but in towns it is almost a necessity; though the more it is confined in its operations, the better for the pocket of the employer. In many even small establishments this book extends to butter, milk, cheese, and green-grocery; but it is far better to let these articles be supplied from some neighbouring shopkeeper fixed on by the mistress, and to let him send in his bill weekly to be paid by *her*. When this is done, there remain very few things indeed which will require a book, for even the herbs should be included in the green-grocer's weekly bill; and, therefore, in reality, this book, so much dreaded by mistresses, may be dispensed with altogether, if they will only take care to call in their bills weekly, and pay them themselves.

1498. THE GREASE-POT AND WASH-TUB are allowed in many families as the perquisites of the cook; the consequences often being that a very large proportion of good dripping is put into the former, and plenty of serviceable vegetables and meat also into the latter. It seems like playing a very selfish part to prevent the cook from selling what would otherwise be wasted, and therefore, if on trial, any individual is found to be trustworthy, the practice may be allowed without loss; but in all cases it is better in engaging a cook to arrange with her by stipulating against either the one or the other, leaving the door open for a future relaxation of the rule in case of good conduct. But even then I believe the temptation almost too great, and that very few servants are to be trusted with this discretionary power when their own interest clashes with that of their employers. There are always, in the summer, pieces of meat which may be reclaimed from "going" by care and management, but which may also be as easily condemned to the wash-tub; and this is the first step in a downward course, soon followed, in many cases, by the constant and regular sacrifice of "broken bread," good bones capable of making plenty of stock, and cold potatoes. If, therefore, there is the money to spare, it is better to fix an extra sum for the cook, and give away these doubtful articles to the poor; and if, on the other hand, rigid economy demands a stricter supervision, I am quite sure that no grease-pot or wash-tub ought to be allowed.

1499. THE UTENSILS required for the cookery of each department, will be fully described under the different heads of Roasting, Baking, Boiling, Stewing, &c.

CHAP. III.

THE PREPARATION OF FOOD BY KEEPING.

SECT. 1.—GENERAL REMARKS.

1500. A GREAT MANY ARTICLES OF FOOD are the better for keeping a longer or shorter time, varying, according to their nature, to the state of the weather, and to the place where they are kept. Among the chief of these are—butcher's meat, venison, game, some kinds of poultry, and a few kinds of fish. Even some vegetables are the better for a few hours' keeping, after they are brought in from the garden, such as young potatoes and Jerusalem artichokes; but this is an exception to the general rule, which enforces the necessity of dressing vegetables as soon as possible after they are gathered. On the other hand, many fruits require keeping for some time, such as apples, and pears of the kinds called keepers, mediars, and some others. The best mode, therefore, of keeping these several articles will here be given.

SECT. 2.—ESSENTIALS FOR KEEPING.

1501. THE LARDER has been described at page 155; and when such a room is well situated, meat, &c., may be kept to great advantage. But in many cases, especially in towns, this cannot be managed, and all that can be devoted to the purpose is a small box of wood with perforated-zinc sides, and called a "safe." This is often placed in a small room or closet, perhaps adjoining the kitchen; and then it is not surprising that meat becomes putrid, in warm weather, the day after it comes from the butcher. When there is a back-yard, this safe may often be suspended there with advantage during the part of the day when the sun is shaded off by the surrounding buildings; or permanently, if it is entirely excluded. Dry heat is not so injurious as the moist, yet warm, atmosphere, which always prevails in underground kitchens; and even a much higher temperature, if dry, will do less mischief than one comparatively cool, but moist; that is to say, if the latter is above 60 or 70 degrees Fahrenheit, for below that point decomposition does not go on with any degree of rapidity. It must be remembered, that almost all kinds of animal food intended for roasting require a certain amount of decomposition to make them tender, the only exception being those which are, in the first place, sufficiently so when quite fresh, and, in the second, are so prone to rapid decomposition, that they are not to be kept without great risk: such are veal and some kinds of poultry, which in moderately cool weather will not keep more than a few days, and in summer, are not always to be depended on for twenty-four hours. For this reason, in frosty weather, meat may be kept for an indefinite time without altering its condition; and, in long frosts, there is scarcely a possibility of getting it into a state fit for the spit. Hence, it is always desirable to maintain in the larder a temperature considerably above the freezing point, and below 50, or at all events 60 degrees, with a good current of air free from moisture.

SECT. 3.—DIRECTIONS FOR KEEPING.

1502. Whenever these conditions can be obtained, meat, the produce of mature animals, may be kept with advantage, if it is constantly watched and protected from the flies, for a period of time varying, according to the weather, from a few days to three weeks. It must also *be kept dry*, by wiping the moist parts every night and morning, taking care to separate all the crevices and dry them to the bottom. Beyond the above time no meat improves by keeping, if it is not frozen, but in that case nearly the whole period during which it has been in that state must be deducted, and the time calculated independently of it. There appear to be two kinds of decomposition in animal substances, which are quite distinct from each other, and not always depending upon the state of the atmosphere. In the one kind, the change begins in the parts in contact with the air, especially in those which are the most moist. From these it gradually extends to the deeper parts; but so slowly, that very often the surface is quite putrid, and greenish-brown in colour, while the parts round the bone are as sweet as ever, and maintain their original red. This is a true oxygenation, and is the result of keeping healthy animal substances in a good and proper current of dry air. But in the other kind of decomposition, either the whole mass changes together, or the deep parts go first, and gradually extend their influence to the surface. This is clearly not the result of an union with a fresh supply of oxygen, because that gas would surely affect the surface more than the interior; but it appears to be a new arrangement of the elements already existing in the substance, by which ammonia, and some others of the changeable organic compounds, are evolved. It generally, but not always, occurs in hot and thundery weather, but always with the thermometer above 60 degrees; there is almost always a crackling feel given to the hand in pressing meat when in this state, depending upon the bubbles of gas confined within its meshes;

and the smell is of a peculiarly nauseous kind, accompanied with a pungent impression upon the mucous membrane of the nose, which is not very agreeable. When meat is in this state, it is very unwholesome, and is even unfit for pigs or dogs. It should, therefore, be buried deeply beneath the surface, out of all risk of affecting the health of the neighbouring inhabitants.

1503. When Frozen Meat, Poultry, or Fish are to be dressed, they should be gradually thawed through their whole substance, either by placing them in a warm kitchen for some hours or by immersing them in lukewarm water, and keeping it at that temperature by the addition of more warm water as the frozen meat cools it. Meat and poultry are better warmed in air, because the water takes out a certain portion of their juices; but fish will be more easily thawed in water, and without loss of flavour or substance.

1504. Before Dressing Meat and Poultry which have been hung for any length of time, they should be washed with a little strong salt and water; and if any parts of the former are much decomposed, which may be known by their high scent, a little strong distilled vinegar should be rubbed into them, and then, after remaining on the surface for a few minutes, it may be washed off with salt and water. Game may be treated in the same way; but even without this precaution it is astonishing how the act of roasting restores the condition of this kind of food. Many people who eat their game with a relish, considering it exactly "kept to a day," would turn from it with disgust if they saw it when preparing for the spit; and therefore the young cook must be careful how she rejects any of these delicate kinds of fare as "too far gone," unless she has the authority of some one competent to judge.

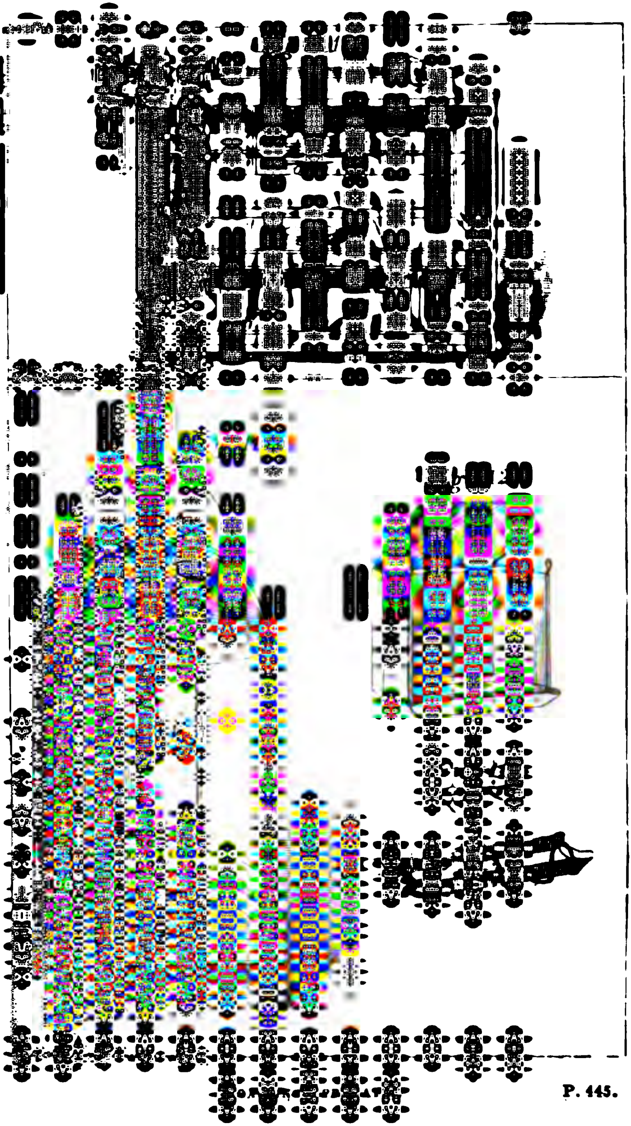
1505. The Cook should watch most carefully all the meat and game under her care, and inform her mistress as soon as she sees the slightest sign by which she may consider it is approaching the proper termination of keeping. Butcher's meat shows its state by the smell, by the touch, and by the look. The slightest taint in warm weather is enough to put the cook on her guard, and especially if the meat begins to feel tender on pressure; if it is turning green on the surface, also, she must consider it as a very sure sign; and especially if, at the same time, the stiffness of the joint is giving way, or bending. Thus, a little practice, with attention to these signs, will soon render her expert, and she may always at first be careful to err on the safe side. In deciding upon the time to keep game, some people hang the feathered kinds up by their tails, and consider they are fit to dress as soon as they drop, and leave their tails behind them. For those who like game "rather high," this is not a bad test in the cool weather of autumn; but in the early part of the season, the feathers adhere too long to give this rule any value, or rather it may be said that if adhered to it will cause the spoiling of many brace of grouse and partridges, which will seldom bear much keeping until after the middle of October.

1506. Fish will sometimes be the better for a day's keeping, or, in cool weather, even two days will not injure its flavour. It should, however, always be kept in a cool place; and it may generally be hung up with advantage, rather than to deposit it on the floor, as is generally done. If, however, it is of a kind which would be injured by becoming dry—as, for instance, turbot, the latter place is the best; but cod-fish and haddock are better suspended. Ice will always keep fish for an indefinite time, if such is desired; but when it is of a kind which is the better for keeping, the ice will suspend the good effects of that operation, and should not therefore be had recourse to longer than necessary.

1507. When Meat, Poultry, or Game is evidently in a state which will not allow it to be kept until the time when it will be wanted, it may be parboiled, or half-roasted, which will postpone its "going" for at least two, or even three days. It must be boiled or roasted for nearly half the proper time, in the first process; and in the second, it will generally take about three-quarters of that ordered for it in the usual way.

1508. Apples and Pears should be stored in a dry room, not exposed to any draught of air, by which they are dried too much, and become shrivelled on the surface. They should also be kept in the dark, if it is desired to postpone the time of their becoming ripe. They should be arranged on wooden shelves, in such a way that each apple is distinct from its neighbours—contact with each other being very apt to cause decay. Every week, at least, they should be looked over carefully, and the rotten fruit picked out. Some people keep them in straw or sand, but neither of these modes is equal to the plan described above.

1509. Potatoes and Jerusalem Artichokes are kept either stored in a dark and dry cellar, heaped up in a corner or stored in casks; or out of doors, in heaps or "buries" covered over with earth, and sometimes thatched. A shallow trench is first made in a situation free from wet—that is to say, well drained. In this the potatoes are heaped up in a pyramidal



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form, at as high an angle as they will sustain without falling. The earth removed from the trench is next laid over them, and beaten down with a spade so as to form a smooth sloping surface on all sides, which, in some soils, is a sufficient protection, but in loose sands will demand the addition of ordinary thatch.

CHAP. IV.

ROASTING AND BAKING OF ANIMAL FOOD.

SECT. 1.—GENERAL OBSERVATIONS.

1510. Although boiling may appear a more simple operation than roasting, and though it is certainly more easy of application when the utensils are at hand, yet the latter is the first step in the science of cookery, since it requires only a fire, while for boiling a waterproof vessel must be added. In savage life roasting or baking is common enough, a fire of dry branches being first made, and then the meat to be cooked is suspended near it by transfixing it with a straight stick, and supporting this upon two forked sticks stuck in the ground. For baking they scoop a hole in the ground and make a fire in it, then, after thoroughly heating it, the fire is removed, the meat introduced, and covered over with a flat stone, or with branches when this is not at hand. With these rude methods a joint may be cooked with a considerable approach to perfection, quite equalling the most successful efforts of any cook *who does not baste her meat*, an operation which the savage cannot perform, because he has nothing to catch the dripping in, nor, if caught, has he a spoon to baste with.

SECT. 2.—UTENSILS.

1511. **FOR ROASTING OR BAKING**, the kind of grate is of the utmost importance: it being impossible without a good one to turn out a well-dressed joint to advantage. It may be said that an open fire will always dress a joint of meat; and so it will, but not a large or small one at the choice of the cook, unless the fire is capable of being made narrow or broad, shallow or deep, according to the shape of the joint and its mode of suspension. The various kinds of kitchen-ranges will be found described at pages 152 and 153; and the comparative cost of fuel, including gas, at page 108. It is therefore unnecessary here to return to the subject; but the reader may be reminded that when alluding to roasting, I mean at an open fire; and by baking, I intend the process as conducted in an iron oven attached to a grate, or in a baker's oven. Unless therefore any specific remarks refer to roasting or baking by *gas*, the above methods of cookery are always to be understood.

1512. A **SPIT OR HOOK** for suspending the meat, with some kind of machinery for turning it, is the next in importance to the fire. Of these, the horizontal spit, worked by the smoke-jack, is the most perfect (described at page 182, and illustrated by *fig.* 67). In every case the article to be roasted is either suspended from above by a hook, or string tied to it, or it is transfixed by a horizontal spit (see *fig.* 110, A B), and kept from turning round upon it by driving the points of the slide (C) into the end; this slide travels freely upon the spit, but the shape of this being angular, and the socket of the slide fitting accurately, it cannot slip round, and consequently when pushed well into the meat it keeps it firmly fixed upon the spit. The next thing is to provide for the regular and constant rotation; this is done in the most simple way by a piece of cord, which after it has been twisted in one direction has a tendency to untwist itself, and so keeps up its action for a certain time, but requires constant attention. Next to this comes the bottle-jack (*fig.* 111 A), which, by means of common clock-work, keeps up a constant revolution of any article attached to the hook (B). The objection to this kind is that a fire can with difficulty be made equally strong at the top and bottom, and, consequently, the joint is roasted either too much or too little in one or other of its ends. But being of a comparatively low price it is often used, and succeeds well enough for poultry, game, or small joints. The horizontal roasting apparatus (*fig.* 110) answers every purpose; and for a small family, not requiring large haunches of mutton or venison to be dressed, it is quite equal to the smoke-jack. The spit shown at *fig.* 110 is the ordinary one, which serves for joints, or for poultry or game; and one on the same principle is used also for these articles with the smoke-jack; but in addition a cradle-spit (see *fig.* 67) is frequently employed, so as to include certain stuffed joints in its embrace without perforating them. It is not, however, very often wanted, and may well be dispensed with. In this kind of apparatus the spit is made to revolve by clock-work at (D), wound up by a key in the same way as the bottle-jack.

1513. **Besides the Spit and Jack, a Screen** must be used to prevent the loss of heat, which would otherwise occur by radiation. If a smoke-jack is used, a large screen is brought up near the fire, similar in form to *fig.* 110, but somewhat larger, and generally made to hold and warm the dishes and plates intended for dinner. In order to have it of the most perfect kind, it should be made of wood, which is a non-conductor of caloric, and lined with polished tin, which is a good reflector of it; but, in general, it is made of tin, and painted on the outside, which is, however, a bad plan, as the paint increases the tendency to radiate heat (see par. 201). If, therefore, it is not made of wood, it should be left with as much metallic polish as possible *on both sides.* The two forms (*figs.* 110 and 111) are those usually adopted, and answer the purpose exceedingly well, though not quite equal to the large screen adapted for the smoke-jack, because they do not so completely keep off all the cold draughts of air from doors and windows, and these cool the joint almost as much as the loss by radiation.

1514. **A Dripping-pan and Basting-ladle** will always be necessary, the former to collect, and the latter to use the dripping upon the joint. In the dripping-pan a well (*figs.* 110 E, 111 E) is provided to catch the fat and gravy as they fall, the whole surface inclining to it; this well is covered with a hinged-lid, so as to keep any cinders out. The ladle is merely a long iron spoon, tinned.

1515. **In the Oven** attached to grates, there is very little to describe, it being a mere chamber of iron (*fig.* 68) with flues conveying the heated products of the fire round it, at the will of the cook. A damper cuts off these, or otherwise; and in many grates the cook is enabled, by raking the hot coals into a chamber provided for the purpose, to increase the heat very considerably. For baking, all the steam is purposely confined; but when these ovens are used for roasting, certain ventilators are opened, and these cause a current of air, which certainly takes off, in some measure, the peculiarly rank taste generally accompanying this kind of cookery.

1516. **Dutch and American Ovens and Toasting Ovens** suspended to the bars, are also used to roast certain articles before a small fire, without revolution on the spit. They are very useful for small families. (See *figs.* 112 and 113, which represent the Dutch oven and the toaster.)

1517. PRICE OF ROASTING UTENSILS.

	£	s.	d.		£	s.	d.
Smoke-jack, complete (see page 152)	5	0	0	to	10	0	0
Meat-screen for ditto, of wood, lined with tin	1	10	0	,,	3	10	0
Ditto with hot closet, from	4	10	0	,,	7	0	0
Dripping-pan and stand...	0	15	0	,,	1	5	0
Horizontal spit and jack, with meat-screen, dripping-pan, and plate-warmer (see *fig.* 110)	3	3	0	,,	4	10	0
Bottle-jack and screen, with dripping-pan (see *fig.* 111) ...	0	18	0	,,	1	8	0
Ditto with hot closet	1	16	0	,,	2	0	0
American oven	0	10	0	,,	0	15	0
Dutch oven (see *fig.* 112)	0	4	6	,,	0	6	0
Hanging toaster (see *fig.* 113)	0	1	6	,,	0	4	6

SECT. 3.—SPITTING AND TRUSSING.

1518. **Spitting** is merely the insertion of the spit; but even this operation, simple as it appears, requires some little nicety. If the article is to be suspended, it is only necessary to hang it up by its smallest end, because the fire being generally stronger below than above, it will, in this way, be more likely to be thoroughly done. The horizontal spit should be kept very clean, and tolerably sharp, and in introducing it be careful to pass it as near as possible through the *centre of the joint*, so that, in revolving, it may present all its sides at equal distances from the fire. A neglect of this precaution causes the projecting part to be overdone, or the receding part to be the reverse.

1519 **The Cradle-spit** is intended to include large kinds of poultry, or rolled and stuffed joints, &c., without transfixing them. It, however, cannot be used without leaving its mark wherever it touches, and is therefore very objectionable on that account.

1520. **Poultry and Game** require to be trussed before they are roasted, which is done with the aid of skewers, trussing needles, and fine twine. When poultry is bought of the poulterer, it is generally sent home ready for the spit. If otherwise, it must be treated as follows:—The skewers are of the ordinary wooden kind, and the needles are merely of iron, similar to packing needles, and sold in the shops as "trussing needles," some being bent or curved, and others straight. Before trussing, it is first necessary that the skin should be thoroughly deprived of its feathers, and the hairs remaining are to be singed off with white paper, or gas answers still better; they are next to be drawn, which is better done after singeing, though some cooks reverse this proceeding.

1521. **In Drawing Game or Poultry**, there are two methods of proceeding, depending upon the time during which the birds are to be kept. Thus, when partridges, pheasants, or poultry are to be kept as long a time as possible, it is desirable to remove the crop and intestines without admitting air into the interior; this is done by the method described below; but the objection to it is, that sometimes, though not often, the gall-bladder is broken, and causes thereby a degree of bitterness which is very unpleasant:—Take a wooden skewer, and pass it into the vent so as to hook the intestine on its point, then withdraw it with the point on the thumb, and it will bring a part with it inverted, like the finger of a glove in drawing it off; keep repeating this until a loop of intestine is brought out, when, by means of the finger using gentle traction, the whole may be drawn, leaving the gizzard, heart, and liver behind. The crop should be removed through a small slit made in the side of the neck, which will admit the finger to grasp it and draw it out as whole as possible. Some people prefer leaving this in until the final trussing, and for poultry which have had twelve hours' fasting it is quite unnecessary to remove it; but in game, and especially in pheasants, the crop is often very full, and if allowed to remain will ferment, and cause the adjacent parts to turn sour.

1522. **The Usual Method** is to make a transverse opening with a knife between the vent and the rump. Through this the intestines are carefully drawn, and *after* they are all out, they should be severed at the vent; then pass in the fingers and detach the gizzard, liver, and heart from their attachments, together with the crop, if it has not been already removed through the neck; but it is better to bring away all together. After all are withdrawn, stretch the vent with the finger, and pass it over the rump, which will completely close the opening. The gizzard is now to be detached, and slit open on *one* side, which will expose its contents; these are to be removed, together with the lining membrane, which easily peels off, beginning at the cut edge. Then take away the gall-bladder from the liver, after which it may be separated from its attachments, but leaving the heart with it; the two forming the appendages of the one wing, as the gizzard does of the other. The lungs are left closely attached to the back-bone, being small and perfectly innocent. No water should, on any account, be used to wash out poultry, unless any of the hollow organs have been broken, in which case water must be freely applied; but otherwise it is injurious, both from its causing loss of flavour and a tendency to putrefaction. In geese, ducks, and often in fowls, there is a quantity of internal fat with the intestines, which should be preserved. In the two last kinds it serves to baste them, when melted, and *goose-grease* is useful for many purposes.

1523. **Trussing for Roasting** is managed in a different way from that for boiling, described under the chapter on that process. The following list of the methods adopted for roasting include the various kinds of poultry and game. It should be carefully remarked, that all skewers and strings should be removed after roasting, except the fine thread used in sewing up the belly of the hare or rabbit.

(*a*) **Turkeys, Fowls, and Pigeons** are trussed alike, with very slight variations. The legs are first broken half-way between the feet and the next joint, then fixing the feet in a door-joint, or a table-drawer, or in a screw-press, the sinews are torn out. Next place a doubled-up cloth on the breast, and press or beat the bone till it gives way. After this the wings have a slit cut in their thin expansion of skin, and through this the gizzard and liver are passed, one on each side; next to which the pinions are turned over the back, and a wooden skewer is passed through the flesh of each wing close to the bone, transfixing the body, and also each thigh. The head is cut off close to the body, first drawing the skin well back so as to leave a long covering for the end. This piece of skin is then passed under the ends of the pinions, or if in a stuffed turkey it is tied with a piece of coarse string, which is removed after roasting. In stuffing be careful not to fill the skin too full, or it will burst in roasting. All is now described but the legs, which should have been pushed up under the skin of the breast, and secured there by the skewer transfixing them and the wings through the body, and passing through them close to the joints. The horny skin is scalded and peeled, after which a piece of string, or a small skewer, at the small end of the legs completes the operation. If the skewer is used, it transfixes the side bones (see *fig.* 114 and 115).

(*b*) GEESE AND DUCKS have their heads cut off in the same way as described at (*a*); but the legs are cut off at the first joint above the feet, and the wings are also removed at the first joint. Sometimes, however, the legs of ducks are left on as in fowls. Next introduce the stuffing and tie the skin, as described at (*a*). After this the wings are transfixed by a skewer through the body, and the legs the same, keeping them down by the side of the side-bones. The giblets, including the pinions, legs, liver, heart, gizzard, head, and neck, are separately cooked (see *fig.* 117 and 118).

(*c*) WILD-FOWL are trussed as described at (*b*), except that their legs are left on, and twisted each at the knuckle, so as to rest the claws on each side the back, where they are secured by transfixing them with a skewer, which also tacks the end of the pinion. The legs are scalded to get off the outside skin (see *fig.* 124).

(*d*) GUINEA-FOWL AND FEATHERED GAME are trussed like the turkey, except that the heads are left on and turned under the left wing. The feet of partridges and grouse are also left on, having removed the toes, and generally those of pheasants and guinea-fowl. But sometimes they are now removed (see *figs.* 120, 121, and 122).

(*e*) HARES AND RABBITS, for roasting, are first filled with stuffing; after which they are sewn up with a needle and thread. The head is then bent back upon the shoulders, and fixed there by a skewer passed through the mouth and into the body. The fore-legs are extended straight along the sides, and skewered there through the body; after which, the hind-legs are also brought straight forward, sometimes requiring a slight notch behind the joint to allow of this, and they are secured with a skewer. A string is then crossed under the belly, so as to catch the four points of the skewers, after which the ends are brought up over the back and tied (see *fig.* 119).

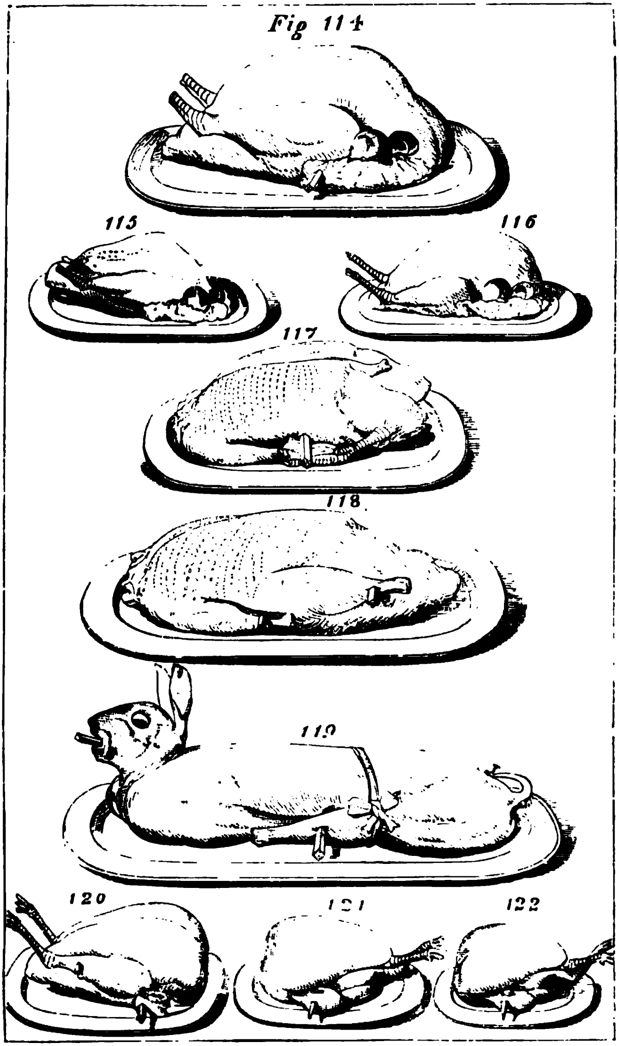
(*f*) FOWLS AND PARTRIDGES are now often trussed so as to conceal the legs under the skin, and to dispense with skewers altogether. This is done by first rolling the skin backwards and forwards over the roots of the thighs, and then pushing these joints completely under the skin of the breast. Next take a long straight trussing needle, and pass it through the end of the first pinion across the body, and into that of the opposite side, bringing it back through the joint of the thigh, *while thus under the skin*, then carry it across and transfix the opposite thigh in the same way, and tie it to the other end of the string tight enough to maintain the proper shape. After this, the legs only require to be tied to complete the trussing. There is, however, no advantage in this plan over the skewers, and the string is more difficult to withdraw (see *fig.* 116).

1524. BONING is rather a difficult process, and should scarcely be attempted without an actual demonstration by a skilful and practised hand. After the feet and head are cut off and drawn as above, the skin is divided along the back, and then, with a very sharp knife, it, with the flesh, is gradually turned down on each side from the ribs, breast, side-bones, and merry-thought, which are left as bare as possible. In doing this it is necessary to take the legs and wings out at their sockets, and carry them with the rest of the flesh; but when all this is removed, their bones, *as far as they are covered with flesh*, are made to project, with the one hand from the cut surface, while with the other the knife is carried round close to the bone, until, by continued repetition of this cutting, there is nothing left but the pinions covered with skin, and the lower half of the drumsticks, which are left to keep up the original appearance. When all this is done the skin is turned outwards, and with the aid of skewers, needles and thread, and stuffing, the bird is made to assume its natural shape, or as near an approach to it as possible.

1525. JOINTS OF MEAT which are to be divided in carving should be carefully jointed by the butcher, but it is the duty of the cook to see that this has been done, as without it the carver has a most troublesome task. Jointing is particularly necessary in loins of mutton or veal, and in the fore-quarter of lamb, or in neck of veal; the joints require to be well separated with the chopper, which should be made to pass deeply between the bones.

SECT. 4.—GENERAL MANAGEMENT OF THE FIRE.

1526. DURING THE PREPARATION OF THE ARTICLES TO BE ROASTED, the fire should be gradually getting into a proper condition for the process; but in order to this it must have been made up previously, with enough coal to carry it well through, unless the joint to be roasted is a very large one. Thus, a haunch of mutton or venison, or sirloin of beef require a large fire to be made up an hour before they are put down, without which they cannot possibly be properly roasted; while for



TRUSSING FOR ROASTING. P. 448.

Fig. 114.—Turkey. *Figs.* 115, 116.—Fowl. *Fig.* 117.—Duck.

smaller joints half an hour is long enough. It is not desirable that the fire should be at its best when the meat is first put down, but it must be burning up briskly, and throwing out a good heat. For small joints, or for poultry, &c., a small brisk fire will suffice, and, in fact, will roast better than a very large one. In every case, the fire should be made up to the top-bar with lumps, and as soon as these are burning pretty strongly they should be somewhat damped, by heaping up some wetted small coal or cinders upon them, so that a very slight stirring at intervals will keep the fire at a strong but steady heat without flame. Just before the joint is put down a stir should be given, which should be forcible enough to last for some time. Unlike boiling, the temperature of the open fire varies greatly, according to its size and kind of coal used. Some of these throw out a scorching heat, such as the Brooch coal of Staffordshire, and yet their temperature in the mass itself is said to be really lower than that of the Newcastle coals. It is difficult to measure the heat in roasting, without a thermometer of a description different to the ordinary ones, as it is far above the boiling point of water, as evidenced by the charring effect on the fat, which is not altered at that temperature from its natural state as to colour. In Dr. Kitchener's justly celebrated *Cook's Oracle*, at page 125, the calculations for roasting are said to be "for a temperature of about 50 degrees of Fahrenheit;" but this is evidently a mistake, either of his own or of his printer, as that temperature would not even warm the meat, much less roast it. I believe that it ranges from 350 to 600 degrees of Fahrenheit, or even still higher in very fierce fires. This calculation is for the distance of twelve inches from the front of the fire, that being about the average. In small fires there must be a much closer proximity of the joint, say at six or seven inches, while in very large ones fifteen inches will not be too far off.

1527. If there is a smoke-jack, place the dripping-pan under the meat, far enough from the fire to escape the coals dropping out, but near enough to catch all the dripping as it falls from the meat. Then put down the spit in the rack, and bring up the screen, placing it so that it will not only reflect the heat of the fire, but keep off all draughts of cold air. Where a screen and jack together are used with a dripping-pan attached, the whole are placed before the fire at the same time.

SECT. 5.—GENERAL PRINCIPLES OF ROASTING.

1528. ACCORDING TO LIEBIG, it is essential to the successful and economical management of roasting, to put the joint down first of all *close to the fire*, so as to coagulate the albumen on the surface, and thus to prevent the escape of it in a fluid state. This answers remarkably well in boiling, but not in roasting, because the heat is not applied to the whole surface at once, but only to one half of it, the other half being cooled at that time, so that it is impossible to raise the surface, without scorching it, up to the coagulating point of albumen, until the whole mass is also above 150 degrees. In a Dutch oven the plan is good, both in theory and practice; but with a revolving spit it is totally erroneous, and the old directions, to put down the joint first at a distance and then gradually bring it nearer to the fire, are the correct ones. In roasting, very little besides water and fat are expelled from the meat, the former by evaporation, and the latter by liquefaction from the increased temperature and by contraction of the fibrous tissues owing to the same cause. A small quantity of gravy, containing the juice of the flesh (osmazome) is also expressed; but the loss in this way is very trifling, not amounting to more than a few ounces of gravy in a large joint of meat, and never being more than enough to serve as gravy. Indeed, in roasting, there is absolutely no loss whatever of anything but water, the fat being collected as dripping, and of equal value with the meat, while the osmazome is saved in the form of gravy, or else it is collected about the dripping-pan, from which it is dissolved in the water poured into it to make the gravy served with the meat. Although, therefore, there is a great difference between the weight of a joint when cooked and that which pertained to it when raw, yet this loss, after allowing for the weight of dripping and gravy, is to be considered as due to the water passing off by evaporation; so that a roast joint of meat, together with its dripping and gravy, contains all the nourishment which pertained to it beforehand. This, we shall presently see, is not the case with boiled meat.

1529. Besides this absolute economy in roasting, there is also the advantage that roast meat is more grateful to the stomach than boiled, and can be eaten for a longer time without change. This is probably due to the presence of the saline ingredients; but to whatever cause it may be referred, there is no doubt of the fact, that any one will much sooner get tired of boiled mutton than roast, or of boiled than roast beef; and also, that invalids can digest roast in preference to boiled mutton, both being fresh.

1530. THE WEIGHT thus lost by evaporation and dripping of fat and gravy varies a good deal according to the quality of the meat, the proportion of bones, and the amount of fat, as already fully described at page 243. It is also said, that by roasting with gas, there is less loss by evaporation, with a greater saving of dripping; and this, I am assured upon good private authority, as well as from public experiments recently made. According to an experiment made by M. Soyer, at the Greenwich Hospital (the account of which was published in the *Mechanics' Magazine*) twenty-three legs of mutton, weighing 184 lb., were roasted by gas at a cost of 10½d.; the gas costing 4s. per 1000 feet.

When cooked they weighed	145	lb.
Dripping	19	,,
Gravy, or osmazome ...	2¼	,,
Water, or loss	17¾	,,
	184	lb.

Twenty-three joints, also weighing 184 lb., were afterwards cooked in one of Count Rumford's ovens, usually considered more economical than roasting, and consuming 102 lb. of coke, and 30 lb. of coal, valued at 1s. 8d.—

They weighed when done	132	lb.
Dripping	18	,,
Gravy	0	,,
Water, or loss	34	,,
	184	lb.

The gain by the use of gas was therefore—

	s.	d.
13 lb. of meat	6	6
1 lb. of dripping	0	5
2¼ lb. of gravy	3	6
Difference in cost of fuel ...	0	9½
Total gain	11	2½

In this, as in other similar experiments, I cannot help thinking that the saving is more apparent than real, and that it depends upon the more regular application of the heat, and upon *the meat being done in the one case more thoroughly than in the other*. It is an acknowledged fact, that there is no loss in roasting, except by evaporation of water, and if so, what became of the 13 lb. of meat which were said to be gained by the gas-roasting at Greenwich? It did not fly away as meat, it did not ooze out as dripping, nor as osmazome; for there was less of the former and none of the latter; and therefore I should conclude that it was dissipated as vapour or water, leaving the meat in this case done thoroughly, while that from the gas-roaster must, I should fancy, have been rather under-done. In order to try this experiment properly, it requires the superintendence of a person not interested in the success of either plan, and who has not been previously biassed, so that he would, as far as possible, permit both sets of joints to be cooked to the same degree; and when this is done, I believe, from theoretical principles as well as practical experience, that the result will be as nearly as possible the same. But with regard to the comparative efficiency of gas, I have no doubt, as I am persuaded that it is quite equal to the most sanguine expectations of its advocates, and with this great advantage, *that the dripping and gravy are quite clear and free from cinders or dust*. So that there is, practically, not the slightest loss in this kind of roasting.

1531. TABLE showing the LOSS PER CENT. by the various JOINTS in ROASTING and BAKING:—

		100 lb. loss
Roasting with gas ...	(Soyer)	21¼ lb.
Baking in Count Rumford's oven	(do.)	27¾ ,,
Do. in common oven ...	(Tilloch)	30 ,,
Roasting beef before fire ...	(do.)	32 ,,
Do. shoulders of mutton ...	(do.)	31½ ,,
Do. loins	(do.)	35½ ,,
Do. necks	(do.)	32½ ,,
Do. sirloins and ribs, beef	(Donovan)	19½ ,,
Do. legs and shoulders, mutton	(do.)	24¾ ,,
Do. lamb	(do.)	22½ ,,
Do. poultry	(do.)	20 ,,

The loss, as stated by Tilloch, agrees very closely with experiments made by myself. Under this head are included the dripping and gravy, the calculation being based on the difference in the weight before and after roasting.

1532. A KNOWLEDGE OF THE TIME REQUIRED FOR ROASTING is very essential to the cook; and in cooking for parties she should be careful to put her meat down so as to be ready for the *second* course, not for the first, which usually occupies about ten minutes. Nevertheless in such cases it is always better to have the meat done a little too soon, and to keep it hot before the fire, rather than to have to send it up under-done. The precise time occupied in roasting each article will come better under the next section: but as a general rule, a quarter of an hour to each pound of meat is the proper allowance, adding a little for large joints, and taking off in the same way for small ones. It is better in roasting joints of any size to lay them in the dripping-pan at a distance from the fire, so as to warm through before beginning to time them. Many cooks also at this time sprinkle them over with salt, and I think with great advantage.

1533. GRAVY is always made after the meat is taken up, except when what is called "made-gravy" is intended to be used, as for game and poultry, in which there is no osmazome pressed out in the roasting, and consequently nothing to make it of in the dripping-pan. With mutton, beef, and butcher's meat generally, after the meat is taken up, so as to liberate the dripping-pan, the fat in that vessel is poured off, and then a small quantity of boiling water is put into it, and thoroughly washed over its surface by moving it horizontally with a little dexterity, leaving it in while the spit, skewers, &c., are being removed, after which the water, now become gravy, is poured into the dish containing the meat, and is often of very excellent quality, depending greatly upon the manipulations of the cook, and the age of the meat.

1534. **Basting** is the most important of all the requisites for roasting, and it is for want of its being properly done that roast joints are so constantly spoiled. In fat meats, such as beef, mutton, or pork, their own dripping, after it has run into the well of the pan, is the best thing for the purpose; but in poultry, veal, and game there is nothing coming out which will serve, and they must be basted either with plain *butter* (*good* salt or potted), *mutton or beef dripping*, *water and salt*, *milk*, *melted-butter*, or sometimes with *cider*, *ale*, or *wine*.

1535. **Dredging** is another item connected with roasting, and requires a tin box with a perforated lid, called a dredger. This usually holds *wheat-flour*, but for some joints, &c., this is mixed with *grated bread*, *or dried herbs*, *or grated lemon or orange-peel*. The dredger is shaken over the roast at short intervals, so that its contents remain on the surface, and form with the fat oozing out a kind of *coating*, which is sometimes intentionally made very thick, as for hare; but these coatings are not now so common, or fashionable either, as they formerly were, when every kind of roast was sent to table covered with a thick brown crust—whereas now a pale-brown is the usual colour, clear of all flour.

1536. **Paper** is often wrapped or skewered over the fat to prevent its wasting away, as in the inside of the sirloin of beef, or on both sides of the haunch of mutton or venison. For these last also a paste is often made of flour and water, and applied about half an inch thick, when the joint is first put down. Whether the paper or paste is used, it is only suffered to remain on until within half an hour of the finishing, when it is removed, and the surface allowed to assume a delicate light-brown, without any great loss of substance. In this is the great art of roasting to perfection according to the fashion of the present day.

Sect. 6.—Details of Roasting.

1537. The following directions embrace the exceptional and peculiar modes of dressing each kind of roast. It will be understood, that the general principles described in the last section apply here; but that superadded to them are also some other points, which differ in each, more or less, and require attention to give to each dish its characteristic appearance and flavour, as is usual in this country.

(*a*) **Roast Beef** being generally thick in substance, and the joint of large size, the fire must be made of plenty of coals. The sirloin requires the fat to be papered on the inside, as well as that on the ribs. Constant basting is necessary at first with strong salt and water, and afterwards with its own dripping. Gravy may always be made for beef according to the plan given at par. 1533. Horseradish scraped, is generally served round the dish; and also for sauce (see Horseradish Sauce). Time for roasting, a quarter of an hour per pound.

(*b*) **Mutton**, except the haunch, is not of sufficient size to require quite so large a fire as beef; still it cannot be roasted without a brisk and full fire. It should be papered wherever there is fat to be saved for eating, as in the inside and outside of the haunch or the loin; but necks and shoulders are none the better for this care. For ordinary purposes, the gravy made as in par. 1533 is sufficient; but for haunches, and sometimes for legs and saddles, a wine gravy is made (which see) and served with currant-jelly; with shoulders, some prefer onion sauce. Mutton is not improved by basting with water and salt, but should be well basted in its own fat; and towards the last plentifully dredged with flour. The time required is, on the average, as for beef—viz., one quarter of an hour per pound; but, whatever the weight, the time for *long and thin joints*, like necks and loins, will be nearly the same. Legs or saddles of ten pounds will take two and a half hours. The shoulder being more flat will take a quarter of an hour less than the usual allowance—say, for nine pounds, two hours. The loin and neck, also, will require rather less than that calculation.

(*c*) **Venison and Lamb** take about the same time as for mutton. The sauce for venison is made as for mutton; and for lamb, it is always mint sauce (which see).

(*d*) **Veal**, in order to look and eat well, should be thoroughly done at a strong fire, and browned very evenly, with a certain amount of coating caused by the dredging with flour, or with flour and bread-crumb mixed. It must be constantly basted with lard, dripping, or butter, as its own fat is not sufficient for the purpose. It is usual to stuff the fillet with forcemeat (which see), either filling with it the place where the bone was taken out, or else the flap where the fat lies, or by many it is preferred in both situations. For gravy, either make it from the dripping-pan (see par. 1533), or else use any gravy at hand made from other sources, and mix with melted butter. It is served with slices of lemon. The time for roasting is as follows:—A fillet, stuffed, weighing nine pounds, two hours and a half; a shoulder of eight pounds, an hour and three-quarters; a breast of six pounds, one hour and a quarter; loin, an hour and a quarter to two hours, according to size; and for these joints, when either larger or smaller, add or subtract a quarter of an hour per lb.

(*e*) **Pork**, before being roasted, when the joint has the skin on, must be scored with a knife. This is sometimes done by the butcher, but if not the cook must be careful not to neglect it, as it is quite impossible to cut slices through this skin after it is roasted. They should always be made through the skin only, and in such directions and at such distances apart as will correspond with the slices in carving the joint. Pork requires to be put at a distance from a brisk and strong fire, and should be thoroughly done, but not scorched. It must be well basted, and when there is no skin, as in what is called "pig-meat," that is, the meat from large bacon-hogs, a strong solution of salt in water should be used at first to baste it. When there is outside skin, a little dripping or lard must be put in the pan to begin with. Leg of pork is generally stuffed with sage and onions, boiled and chopped fine, and if these are mixed with an equal quantity of boiled potatoes the flavour will be improved, with less danger of unpleasant reminiscences. The stuffing is forced into a slit cut in the large end, near the bone. Gravy is made from the dripping-pan (see par. 1533); it is usual to serve with apple sauce (which see). The time required is for the leg fully half an hour more than the usual quarter of an hour per pound; for other joints that allowance will suffice.

(*f*) **Rolled Beef or Mutton**, sometimes called mock hare, makes an excellent variety hot; and when cold is delicious for the breakfast-table. The bones of a loin of mutton or of ribs of beef are first taken out with a sharp knife, and then the meat is filled with stuffing as for veal, and rolled tightly up, tying it round with string in three places, the string being removed after it is dressed. It requires a rather longer time than the allowance, as it is very thick and solid. The bones make good gravy, and it is usual to add a little sweet sauce. **Beef Heart** is stuffed and roasted in the same way, but it is not good cold. Indeed when eaten hot, its fat chills so very fast that it should be served on water dishes and plates.

(*g*) **Sucking-Pig** may be either roasted or baked. If roasted, it must be put down at a distance from the fire, and should be basted with oil, dripping, or lard. The pig is always stuffed with some kind of stuffing containing sage. *A good Receipt* for which is to take a quarter of a pound of crumbs of bread, one onion, a small handful of sage, a raw egg, and a small piece of butter; these should be well mixed together with a little pepper and salt. Then fill the belly of the pig and sew up with a common needle and thread. *Another plan* is to cut a round of bread thick, as for toast, brown it very lightly, and butter it, then soak it in some water in which a handful of sage and an onion have been boiled, cut it into long pieces, and lay it in the belly, with alternate layers of the boiled sage leaves, but no onion, after which it is to be closed as above. A pig about a month old will take from an hour and three-quarters to two hours; and if two weeks older, another hour. After taking it from the spit cut the head off, and leave the body in the dripping-pan. Then divide the head longitudinally, and take out the brains for sauce; after which, return it to the dripping-pan. When the sauce is made divide the body down the middle, and lay the two halves back to back, with half the head at each end. The sauce is made by chopping the brains up very finely with boiled sage, and mixing with some good plain stock, or the gravy made from the dripping-pan. Some made-gravy should also be served with it.

(*h*) **Poultry, with White Meat**, require all the same management in roasting. They are first trussed according to the mode described at page 447, and then either put in a cradle-spit, or on a small common spit, or suspended from a bottle-jack. All of these require lard, dripping, or butter, to baste them with, the last being the best, but either answering the purpose well enough, provided they are used almost constantly. They should be well floured at first, and kept at a distance from the fire for about half the time, after which they may be put nearer, and when the thin skin rises in little bladders they are generally done enough. Turkeys, and sometimes large fowls, have their necks stuffed with forcemeat (which see), and require a made-gravy for them, which can generally be obtained from odds and ends, including their heads, necks, and legs cut off. Bread sauce and sometimes sausages are served in addition, and the invariable concomitants, ham or tongue, must not be forgotten. Time required, as near as may be, one quarter of an hour per pound.

(*i*) Geese and Ducks are trussed and spitted as shown in page 447, after which they are put down at a distance from a good fire; previously, however, stuffing their whole bodies with sage and onions, boiled, chopped fine, and then mixed with an equal quantity of potatoes. They require plenty of dredging and basting with lard or dripping, and a made-gravy must be served with them; also apple sauce (which see). Time required, strictly according to the regular rule.

(*j*) Wild-duck, Wigeon, and Teal are all roasted like common ducks, but *without stuffing*, and with rather a less allowance of time, though it is not now the fashion to send them to table almost raw, as was formerly the case. Before carving, the knife is drawn along the breast in the situation of the slices; and upon these a lemon is squeezed, and a little Cayenne pepper sprinkled. They all require a made-gravy, with port-wine (which see).

(*k*) Hare should not be roasted, unless moderately young, and well kept, or it will be tough and devoid of flavour. The hare should be paunched as soon as possible, and its inside kept dry by wiping it, at the same time rubbing it with a little pepper-dust. Most cooks, after skinning the hare, soak it for two or three hours to get the blood out from the shoulders; but this is a great mistake, for it does not effect this object until it has completely robbed the muscles of the back and legs of their juice and flavour. The proper plan is to carry a knife between the joints of the shoulders and the breast, as if about to divide them, and then, after wrapping up the whole of the rest of the body in a thick cloth, pump water into these slits for ten minutes; or, better still, turn a cock of water upon them, to wash the blood from the insides of the shoulders where it lodges, without touching the back and loins. Next fill the body with stuffing (which see), and truss according to the directions given at page 447. Proceed to roast it before a quick fire, not too fierce, and baste it perpetually for the first half-hour with hot milk; afterwards use dripping, and towards the last give it plenty of flour with the dredger, alternately basting *with great care* and dredging, until a fine frothy coat is raised, in which the art of a good cook is shown. The time required is about an hour and a quarter to an hour and a half, according to size. Made-gravy is necessary, and currant-jelly.

(*l*) Rabbits are roasted exactly like hare, but being smaller, they require less time. They also ought not to be soaked in water, but washed as directed for hare. From thirty to forty minutes will roast any wild rabbit. Large tame rabbits will take as long as a hare.

(*m*) Winged Game, consisting of pheasants, black-cock, grouse, and partridges, are all dressed and served alike, the time only varying. Pheasants and black-cock will take from thirty to fifty minutes, according to size, at a brisk, but not strong fire. Grouse and partridges from twenty-five to thirty minutes. They require constant basting, but no dredging, as they ought not to be more browned than necessary, according to present fashion. Pheasants and black-cock are served with bread sauce and made-gravy only, but partridge and grouse usually have fried bread crumbs also.

(*n*) Pigeons, Thrushes, Larks, Ortolans, and other small birds are trussed and dressed like partridges, and served with the same crumbs, sauce, and gravy. They are sometimes dipped in egg and crumbs before roasting. From ten to fifteen minutes will roast any of them, except the pigeon, which will take from eighteen to twenty minutes. All should be well basted with butter or dripping.

(*o*) Woodcock and Snipe are dressed with the whole inside left in. They should not be spitted on any account, but suspended, legs downwards, over a toast of bread, which is eaten as a great relish. Twenty or thirty minutes will roast a "cock" and fifteen a snipe. Serve with gravy and bread sauce.

(*p*) Beef Heart, or those of the Calf and Sheep, should be well washed (not soaked) in water, and stuffed as for hare (see *k*). Then roast according to weight, and serve with made-sauce and jelly.

(*q*) A Sheep's Head is very delicious if first parboiled and then egged and covered with bread-crumb, after which it should be roasted before a quick fire, and nicely browned, basting it with care to avoid washing off the crumbs. Calf's Head, without the skin, is very good done in the same way.

Sect. 7.—Larding.

1538. Larding consists in the introduction of thin and narrow pieces of ham or bacon into poultry and meats naturally somewhat dry and devoid of flavour. Indeed whatever roast or stewed dish is usually eaten with these additions, is improved by their introduction into its substance by means of the larding-needle. Thus veal, turkeys, fowls, and rabbits may all be larded with advantage, and roasted or stewed at the conclusion of the operation.

1539. A **Larding-needle** is merely a short thick needle, with a spring opening or slit instead of an eye, so that a narrow slip of bacon may be introduced—just as a penholder is inserted in a steel pen. Charged with this larding, the needle is passed through a pinched-up portion of flesh, and having inserted it so that its two ends project, the slit of the needle is opened and liberates its charge. These pieces of bacon are inserted in regular order, and at intervals of about an inch, in the breast of a turkey, a fowl, or in the substance of veal, &c.; after which the article is considered larded, and is ready for being dressed.

Sect. 3.—Oven-roasting.

1540. In **Common Baking and Oven-roasting** (by which latter name cooking in ventilated ovens is called), the meat is always prepared as in the last section, except that it is not spitted, but put in a dish supported upon an iron wire frame, which suspends it from the bottom. In gas-ovens, the space is purposely made large enough to suspend a joint from the top, and as the jets are all round it, the process is very evenly conducted, and hence arises its economy. M. Soyer has invented a very simple open framework of wire, which lies upon a deep tin or earthenware dish, in two stages, and supports a joint *together with a dish of potatoes*, so that these may be baked upon it, while a Yorkshire pudding is also baked in the dish beneath. As the meat is raised above the potatoes, and these again are above the pudding, dripping falls upon both. It is a very useful addition to the poor man's means of comfort. When these joints are sent to the public bakehouse, the baker knows how long they will take, but if baked at home the time will be as nearly as possible the same as for roasting, depending, however, partly upon the heat of the oven. Sucking pig, leg of pork, and perhaps beef or veal, are nearly as good baked as roasted; but baked mutton, lamb, game, and poultry are not to be compared with these articles when properly roasted.

CHAP. V.

THE BOILING, STEAMING, AND STEWING OF ANIMAL FOOD.

Sect. 1.—General Observations.

1541. In comparing roasting with boiling at page 445, I have observed that though the latter appears to be a more simple process, it is not so in reality, because it requires a greater advance in the mechanical arts, to procure the saucepan or pot in which the water must be contained. But, in the present day, in comparing roasting and boiling, there is no question that the former requires much more art and experience than the latter; and every one's experience will recal to his memory more instances of spoiled roasted articles than of boiled meats injured in the same way.

Sect. 2.—Utensils.

1542. The utensils for boiling meat and poultry are very simple, consisting only of round or oval saucepans of various sizes, which are better lined with enamel, though it is by no means necessary. Where a large oval pot is adopted for the purpose of boiling a number of things together, a net of twine is very useful to keep each separate; and for boiling white meats, in that case, a cloth must be wrapped round them. A trivet placed at the bottom of the pot will also be useful for large joints, in order to prevent them from burning. Stewpans and steamers will be described under the sections devoted to stewing and steaming. Large iron spoons and skimmers complete the list.

Sect. 3.—General Principles of Boiling.

1543. As in roasting, so in the process now under discussion, the principal effect is the coagulation of the albumen, and the rendering tender of the fibrous membranes. This makes the whole much more digestible; and if it were not for the dissolving out into the water of the saline matters, as well as the soluble gelatine and albumen, there would be a superiority in boiling over roasting in every respect. But from their occurrence it follows that unless the liquor is used with the meat, there is a want of these essential ingredients, so that a person fed upon boiled meat alone, with bread and potatoes, and none of the broth, would speedily lose health and strength. The plan recommended by Liebig, for the purpose of keeping in the juices by rapidly coagulating the albumen on the surface, answers well in point of economy; the saving being fully two or three per cent.; but I do not believe that the meat so treated is *quite* so tender. His plan is to immerse the meat in boiling water, and boil for five minutes. After this, lower the temperature down to that which will not scald the hand, either by the simple addition of cold water, or by first abstracting sufficient boiling water to allow of its being poured in. After this, the boiling is carried on at a slow simmer until the meat is done. It is easy to understand how water boiled rapidly acts more energetically upon the meat than when boiled more slowly; for though it never rises above 212 degrees, yet it gives out a much greater quantity of heat in a given time, and, consequently, raises the temperature of the meat much more quickly. Water is kept at a certain temperature in boiling, because whatever articles are raised above that temperature are converted into steam and escape; but meat in it is not capable of being converted into steam, and in water thus rapidly boiled it is capable of being raised above the boiling degree, or 212 degrees, and if not thus raised, it is much more quickly heated, because it receives the superfluous temperature of a greater mass of steam given off in the bubbles accompanying the "galloping" process. It has been observed, under the head of Roasting, at page 449, that, independently of the watery particles flying off by steam, the loss in that process is solely from the fat and gravy which drop into the dripping-pan, and which ought to be collected and saved; but in boiling there is nearly as much dissolved in the liquor in which the boiling takes place, as we shall presently see. According to Mr. Tilloch, whose experiments are corroborated by my own, on the large as well as the small scale, the loss by boiling is as follows:—

Beef in boiling loses		in 100 lb.	26½	lb
Legs of mutton		,,	21½	,,
Boiling salt beef (Donovan)		,,	15	,,
,, Legs of mutton	(do.)	..	10	,,
,, Hams	(do.)	,,	12½	,,
,, Salt pork	(do.)	,,	13½	,,
,, Bacon	(do.)	,,	6½	,,
,, Turkeys	(do.)	,,	16	,,
,, Chicken	(do.)	,,	13½	,,

Donovan's estimate is here pretty correct, except in reference to the legs of mutton, which certainly lose more than 10 per cent.; and I believe fully what is stated on Tilloch's authority, namely, 21½ per cent.

1544. IN COMPARING BOILING, therefore, with roasting, there is an *apparent* gain, according to Tilloch's experiments, of about 10 per cent. in favour of boiling mutton, and according to Donovan's of 14½ per cent. in legs of mutton, and about 14 per cent. in poultry. But then it must be recollected that 100 lb. of roasted meat will produce about 10 lb. of good dripping, and also a pound or two of good gravy, neither of which can be obtained from the boiling process when the liquor is not used; consequently it is imperative that this should be saved, and employed in some way, if this kind of cookery is to be considered more economical than roasting, for otherwise the loss in dripping will counterbalance the saving in other respects. If the boilings are wasted, there is an absolute loss of at least 20 per cent. of good useful matter in the shape of the fat (which, by the way, is always to a certain extent mixed up with scum in boiling, and therefore comparatively useless), and of the dissolved gelatine, albumen, and salts. The gelatine and saline matter may be saved in solution; and when not too salt, as in boiling salt meats, it may be made into good soup; but the albumen and fat are skimmed off during the boiling, and they are not easily cooked up into any useful article of food. Here, as in all kinds of cookery, the chief art in point of economy consists in making use of every part of the food which is fitted to support life, by imparting proper and wholesome nourishment, and a variety in the regular routine, the boiling process is quite capable of effecting all the purposes of the cook, when conducted with the provisions here mentioned and insisted upon.

SECT. 4.—TRUSSING AND BOILING POULTRY.

1545. TURKEYS, GUINEA-FOWLS, AND FOWLS are all trussed in the same way for boiling, the heads being removed as for roasting. The legs are pulled off also in a similar way, but very close to the joint, and the breast-bone depressed. The legs are then gradually insinuated under the skin, and when there the wings are secured through the legs to the body (see *figs.* 125 and 126). Lastly, a sufficient quantity of stuffing is introduced into the neck of turkeys and guinea-fowls, but not in common fowls. They should all be boiled according to Liebig's method, by putting them in boiling water and then cooling it down (see par. 1543). The allowance of a quarter of an hour to each pound, reckoning from the time the water boils, is about that required. The boiling should be very slow, and the water should be constantly skimmed. Bacon, ham, or tongue, always accompany these articles; and oyster or bread sauce, with good gravy.

1546. **Geese and Ducks** are sometimes boiled. They are then trussed as for roasting, and boiled in the same manner as turkeys, with or without a stuffing of sage and onions, and served with onion sauce and gravy. (*Fig.* 127.)

1547. **Rabbits** should be well washed for boiling, and if very bloody at the shoulder, they should be treated as described for hare at (*k*), par. 1537. Truss them with the heads brought back against the right side (see *fig.* 128), then boil. They are best when dropped into boiling water, which should be kept gently boiling and well skimmed for half an hour, or rather better. They are generally covered with onion sauce, or with white sauce. Sometimes a sauce is made with the livers chopped and mixed with fine herbs.

Sect. 5.—Directions for Boiling Joints.

1548. In all these joints the plan of boiling suggested by Liebig is the most economical, and also the best in point of flavour, though, as I before observed, not quite so well calculated to make it tender. For the mode recommended here, see par. 1543. In the following directions the time is generally in accordance with the quarter-of-an-hour calculation.

(*a*) **Boiled Beef** (salted) requires, like all boiled meats, vigilant skimming. The addition of vegetables to the pot in the same water appears to prevent much of the juice being extracted, and is, therefore, economical, as well as improving the flavour. The time must be reckoned from the moment that the water boils, after being dashed with cold. Carrots, parsnips, greens, turnip-tops, and peas-pudding are eaten in different families with it, also a plain suet-pudding. The liquor from salt beef is generally too full of salt to make soup without any addition of other stock or water, but mixed with from two-thirds to three-quarters of either it serves very well, and contains a large quantity of nutritive matter, highly valued by the poor who are at all imbued with economical principles; and, therefore, when not wanted at home, it should be saved for any poor and deserving neighbours. Many people stuff boiled parsley into holes cut in boiled beef.

(*b*) **Pickled-pork** is boiled like beef. If very salt, it should be soaked three or four hours before boiling. The time required is nearly double that for beef, or about twenty-five minutes per pound, very slow boiling. The vegetables eaten with it are the same as for beef, but peas-pudding is almost constantly taken with pork. Great care should be exercised that pork is sufficiently boiled, as, when under-done, it is neither wholesome nor well-flavoured. The skin is left on.

(*c*) **Ham and Bacon**, generally, require soaking, the former for eighteen to twenty-four hours, and the latter for twelve. After soaking, the dirty and rough parts should be scraped off, and then the ham or bacon may be boiled in the way detailed at page 455, allowing twenty-five minutes for each pound, and boiling very slowly. When taken up, the skin is peeled off, and the fat is covered with grated toast. The knuckle of a ham is generally guarded with a roll of paper, fringed.

(*d*) **Beef Tongue** requires, unless quite green, about twenty-four hours' soaking; and in boiling, it will take from three to four hours, according to size, simmering very slowly. The skin is taken off before serving.

(*e*) **Beef Tongue Rolled** is an excellent and economical method of using up both the fat and the lean. A tin is necessary for the purpose, the same as that used for mock-brawn, or a white preserve-jar, with a large hole knocked in the bottom, will answer very well. When the tongue is boiled and skinned, lay it in the jar or tin, coiled up, with the tip outside the root, and upon the top a garden saucer, fitting the tin or pot, and containing at least a weight of ten pounds, then set it by till cold. To turn it out, loosen the sides with a knife, then turn it upside down, and push it out through the hole in the bottom. The slices being cut horizontally all round, the fat and the lean must go together.

(*f*) **A Leg or Shoulder of Mutton** may be boiled, but the former is the most frequently dressed in this way. Turnips or greens are the ordinary concomitants, and caper sauce, or nasturtium sauce, without any other gravy than that coming out of the meat when cut. The time taken will be in accordance with the regular rule, or rather more—say, for large legs, half an hour in addition. The liquor makes good stock.

(*g*) **Neck of Mutton** is boiled and served like the leg, but it will not take more time than the regular allowance.

(*h*) **Shoulder of Mutton with Bread-crumbs** is first boiled, and then slightly browned before the fire in a Dutch oven, being first dredged with bread-crumbs. In this way the flavour is much improved.

(*i*) **Lamb** is boiled like mutton in every way.

(*j*) **Veal** must be put in plenty of boiling water, and be most carefully skimmed,

Fig 123

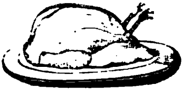
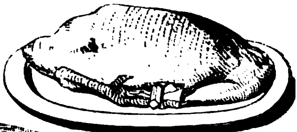


Fig 124



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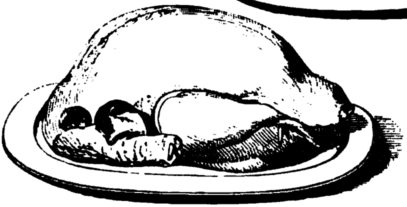

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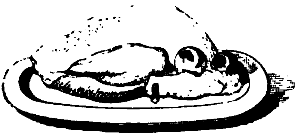

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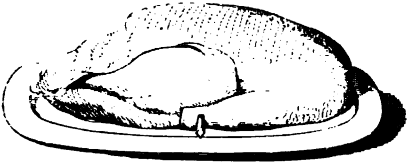

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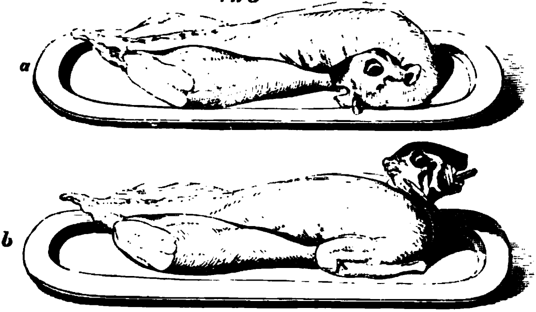


TRUSSING FOR ROASTING AND BOILING. **P. 456.**

Fig. 123.—Pigeon (roast). *Fig.* 124.—Wild Duck (roast).

,, 125.—Turkey (boiled). ,, 126.—Fowl (boiled).

127.—Goose (boiled). 128.—Rabbit (*a*, trussed for

or it will look dirty and brown. Some cooks use a fourth part of milk, and this has an advantage in avoiding the extraction of the juices. The time is in accordance with the general rule. The parts boiled are usually the *knuckle*, the *fillet* stuffed as for roasting, and the breast with its sweetbread. Bacon or ham are eaten with it; and for sauce, either parsley and butter, or white sauce. or, by some people, onion sauce. The water in which veal is boiled makes good stock, with additions; but if milk is used it soon turns sour.

(*k*) BEEF-BOUILLI is *fresh beef* boiled very slowly in a small quantity of water; the liquor being in this way preserved for stock, and not being salt, there is no loss. To an English palate, fresh beef boiled to rags is not pleasant; but when served with vegetables, it is by no means to be despised; and as a regular article of diet, is the only one which preserves all the goodness without waste. It is true, that the same may be done with the liquor of boiled mutton; but here more water is used, and, consequently, the liquor is not so good, neither will the meat bear so much boiling. The economist is, therefore, strongly advised to try this plan once a week for a family, and in a very short time it will be relished here as much as in France. When boiled with whole peas, or green peas (old), or greens, the flavour of the meat is improved, and the soup the next day is more easily made. (See the *Pot-au-feu*, among the soups.)

(*l*) A CALF'S HEAD is first cut in two, down the middle, leaving the tongue whole. The brains are then taken out. Next soak the head for an hour in cold water, to get out the blood which collects in the inside, and spoils the appearance. The head is either dressed with the skin on or off; if the former, it is a much better dish. Put plenty of water in the pot, and boil very gently about two hours, if the skin is off, more or less according to size. With the skin on it will take nearly another hour. The tongue will not take more than an hour to boil, if put in by itself, which is the best plan; and it is served with some of the brains on a separate dish. While the head is boiling, well wash the brains, and soak afterwards in salt and water. Then boil for fifteen minutes, putting them into cold water and reckoning from the time when the water begins to boil. About a dozen sage leaves should be boiled separately, and chopped up finely. These, mixed with the brains and a *slight flavour* of onion (not more than a quarter of a small one) boiled with a little melted butter, make the sauce. Egg-sauce is sometimes used in addition. Ham, bacon, or tongue is generally eaten with this dish

(*m*) TRIPE must be properly prepared at the shops, after which it should be boiled in milk, or milk and water, or water alone, adding two or three large onions. It takes about an hour to boil, and is served with butter only, and the onions boiled with it.

(*n*) COW-HEELS, OR OX-FEET, as they are called in Scotland, make a most digestible and useful dish for those who require a light and nutritive food. They are almost always sold ready boiled, and, in that case, merely require boiling up for an hour. If raw, they will take three hours' slow simmering, and then there will be a saucepanful of good stock.

(*o*) TO BOIL MARROW-BONES.—Tie over the top with floured cloth; boil them, and serve with dry toast.

(*p*) TO BOIL PIGS' PETTITOES.—Boil them, the liver, and the heart, in a small quantity of water, very gently; then cut the meat fine and simmer it with a little of the water and the feet split; thicken with a bit of butter, a little flour, a spoonful of cream, and a little salt and pepper; give it a boil up, pour it over a few sippets of bread, and put the feet on the mince.

(*q*) TO PREPARE PIG'S CHEEK FOR BOILING.—Cut off the snout, and clean the head; divide it, take out the eyes and the brains; sprinkle the head with salt, and let it drain twenty-four hours. Salt it with common salt and saltpetre; let it lie eight or ten days if it is to be dressed without stewing with peas, but less if to be dressed *with* peas; and it must be washed first, and then simmered till all is tender.

SECT. 6.—THE STEAMING OF MEAT, &c.

1549. In this method the meat is placed in a kettle, with a valve to it, and without water. Steam is introduced; and, according to the pressure on the valve, will be the temperature at which it is steamed. If there is no valve, it will not rise above 212 degrees; but with a very slight weight upon a common metal plug it soon rises to 240 degrees, or even higher. There is much less waste in this way, both of heat and of the juices of the meat; and, in point of economy, therefore, the plan is a very good one. In the London eating-houses, dinners for a hundred people, or even more, are cooked at one fire by the aid of ovens and steam-boilers, and at an expense of not more than a third or half a ton of coals weekly. The steam-kettles may be placed at any moderate distance from the fire (see *fig.* 68, F F F); and the pipes being furnished with stop-cocks, the steam is either admitted at the full or partially, and under pressure or not, a waste-pipe being also fitted. Vegetables steamed in this way are particularly tender, but not of quite so good a colour as in boiling.

1550. When it is desirable to boil water by steam for the purposes of cooking, as for some vegetables, soups, &c., it is only necessary to fill any of the above steam-kettles with water, and then turn on the steam as usual. The water is soon heated to the boiling-point, and then acts exactly as if placed upon an ordinary fire.

1551. IN THE OLD-FASHIONED STEAMER a vessel is placed upon another, fitting tightly into it. The bottom of the upper vessel being perforated with holes, the steam passes through and acts in the same way as if admitted by a pipe; but the objection is that the condensed steam and the other juices of the vegetables, &c., cooked in the steamer are very apt to return into the lower vessel, and injure the flavour of its contents. It has been chiefly used for potatoes, which are thought by many people to be better when steamed than when boiled in water.

SECT. 7.—STEWING AND STEWS.

1552. UNDER THIS HEAD are comprised slowly-boiled or stewed meats, served with their gravy, and generally flavoured with vegetables of some kind. The chief art here is to keep down the temperature so as to avoid the hardening of the fibres and too rapid coagulation of the albumen by heat. For this purpose the meat is put into *cold* water, and it is very gradually raised to a very low boiling point—what is called a "gallop" never being permitted.

1553. THE UTENSILS are merely stewpans of suitable sizes, which may or may not be heated by steam-pipes. Stewpans are now almost always rather shallow vessels, or saucepans of enamelled iron, or sometimes of block-tin or tinned copper; and they are either heated on a hot-plate, or kept a proper distance from an ordinary fire, or placed in a water-bath.

1554. THE FOLLOWING RECEIPTS will be found exceedingly nourishing and of good flavour, and in point of economy will go further than any other dishes whatever. It will be seen that in a great many cases, in order to improve the flavour, the meat is either roasted or fried before it is stewed.

1555. STEWED MEATS:—

(*a*) IRISH STEW.—Take some mutton-chops and cut off part of the fat, lay them in the bottom of a stewpan, slice some onions very thin, and strew them over with pepper and salt, cut a quantity of potatoes in halves and lay on the top, put water sufficient to keep it from burning and to make gravy when it is turned out; let it stew gently for about three hours before adding the potatoes, and three-quarters of an hour after.

(*b*) HARRICOT OF MUTTON.—Take a loin or neck of mutton, cut it in thin steaks, and take away part of the fat. Then butter a stew-pan; flour the meat, dredge a little pepper and salt over it, lay the best pieces into the pan, and set it over the fire to brown; turn them one at a time; then put in some onions and celery, some sliced carrots and turnips (first boiled and then fried), and lay them on the mutton with just water enough to cover the meat. Put a layer of mutton, and then carrots. This will take three hours to stew. Add a little ketchup, or anchovy, or Worcestershire sauce to the gravy before serving.

Another Receipt.—Take the middle of a neck or loin of mutton, cut it into thin steaks, season them with pepper and salt, and brown them in a pan with butter; when brown, pour off the butter, and put in three pints of boiling water, one anchovy, one onion, a few turnips and carrots, cut into shapes. Stew it gently for two hours, or more. Thicken with flour and butter just as you send it up. The harricot is richer if the carrots and turnips are browned in the pan after the steaks are taken out, before being stewed.

(*c*) STEWED MUTTON CUTLETS (*French*). Skin a loin of mutton, and cut it into steaks. Make a forcemeat with lean of veal, beef suet, thyme, sweet marjoram, and one onion, all cut small; essence of anchovy, nutmeg, pepper and salt, and the yolks of two eggs, with some grated bread. Insert some of the forcemeat in the lean of the steaks, and cover all thickly with it. Stew till tender in a little gravy. Then put each steak in a buttered piece of writing-paper; turn in the corners of the paper to keep in the moisture, and finish them on the gridiron; or they may be baked from the first in the oven. Serve in the papers.

(*d*) HOT-POT.—Take some fine chops from a neck of mutton, and trim them nicely, taking off most of the fat. Lay them at the bottom of a deep and rather wide dish, and season them with pepper and salt. Lay a few slices of an onion in the middle at the bottom of the dish, if the flavour is approved, and pour a quarter of a pint of cold water upon the whole. Then cover it with a layer of sliced potatoes, on the top of which lay a few more small chops, well-seasoned, and cover all with another layer of sliced potatoes. Bake from an hour to an hour and a half, or more, according to the size of the dish, in a very moderate oven.

(*e*) TO STEW A BREAST OR SHOULDER OF VENISON.—Let the meat hang till fit to be dressed; then take out the bone, beat the meat with a rolling-pin, mix with some slices of mutton fat that has lain a few hours in a little port wine, sprinkle a little pepper and allspice over it in a fine powder, roll it up tight, and tie it; set it in a stew-pan that will just hold it, with some mutton or beef gravy, not strong, half a pint of port wine, and some pepper and allspice; simmer it close-covered, as slowly as you can for three or four hours; when quite tender take off the tape, set the meat in a dish, strain the gravy over it, and serve with currant-jelly sauce. This is the best way to dress these joints, unless very fat, and then they should be roasted. The bone should be stewed with them.

(*f*) MOCK VENISON STEWED.—Take a fat loin of mutton, the outer skin must be stripped off, and the bones cut out. Put the bones into a stew-pan with a good-sized onion stuck with cloves, one anchovy, some peppercorns, and a bunch of sweet herbs. Stew for three hours in a small quantity of water, then strain. The mutton should be beaten with a rolling-pin, and nutmeg grated over the inside the previous night. Before it is put in the stew-pan it must be rolled up tight, beginning at the tail end, and tied with a strong string. Add half a pint of port wine to the gravy, and let it all stew together for three hours at least. A large loin or saddle will require four hours. When done, the fat must be skimmed off, and the gravy thickened with a little flour and butter, and a small quantity of ketchup added.

(*g*) HODGE-PODGE.—Take a scrag of mutton, and half a pound of green split peas, and two pints of water, and let it boil two hours, strain the soup through a cloth, then add carrots, turnips, lettuce, onions, mutton chops (without any fat), a table-spoonful of sugar, and salt to your taste; half a pound of dried green peas, or, in their season, peas from the garden. If the dried peas are used, they must be put into soft water, and gently simmered till they are tender, and added to the soup half an hour before dinner.

Another (*a genuine Scotch Receipt*).—Put on as much water in a good-sized goblet as will make two days soup to serve six or eight of a family, three hours before dinner-hour add two pounds of hough (*Anglice*, leg of beef), half a dish of old peas, one dozen of middling-sized carrots cut down in small pieces, and four onions cut down; let this boil an hour and a half, then add the other half-dish of peas, and two pounds of mutton chops. When it has all boiled for three hours, take out the hough and serve it up with the mutton chops in it. It is considered best the second day; it should be as thick as porridge nearly. A few beans and turnips can be added, but the turnips are apt to sour it; yet when peas are scarce and young, it is necessary to put turnips to make it thick enough.

(*h*) TO STEW A RUMP OF BEEF.—Wash it well and season high with salt, allspice, pepper, cayenne, three cloves, and a blade of mace, all in fine powder. Bind it up tight, and lay it in a pot that will just hold it. Fry three large onions sliced, and put them to it, with three carrots, two turnips, a shalot, four cloves, a blade of mace, and some celery. Cover the meat with good beef broth, or weak gravy. Simmer it as gently as possible for several hours, till quite tender. Clear of the fat; add to the gravy half a pint of port wine, a glass of vinegar, and a large spoonful of ketchup; simmer half an hour, and serve in a deep dish. Half a pint of table-beer may be added. The herbs to be used should be parsley, thyme, basil, marjoram, or knotted marjoram, and some chives if at hand; but observe to proportion the quantities to the pungency of the several sorts; let there be a good handful all together. Garnish with carrots, turnips, mushrooms or pickles of different colours, cut small, and laid in little heaps separately; chopped parsley, chives, beet-root, &c. If, when done, the gravy is too much to fill the dish, take only a part to season for serving, but the less water the better; and to increase the richness, add a few beef bones and shanks of mutton in stewing. A spoonful or two of made mustard is a great improvement to the gravy.

(*i*) STEWED BEEF STEAK.—Fry a tender steak in the usual way, but lightly, with the onions, turnips and carrots; then stew as above, and it will be better flavoured than when in a large mass. It may be done with or without the carrots and turnips. If without them, the gravy must be flavoured with Worcestershire sauce and anchovy, and thickened with a little flour or arrow-root.

(*j*) TO STEW BRISKET OF BEEF.—Put the part with the hard fat into a stew-pot with a small quantity of water; let it boil up, and skim it thoroughly; then add carrots, turnips, onions, celery, and a few pepper-corns. Stew till extremely tender; then take out the flat bones, and remove all the fat from the soup. Serve that and the meat in a tureen; or the soup alone, and the meat on a dish, garnished with some vegetables. The following sauce is much admired, served with the beef:—Take half a pint of the soup, and mix it with a spoonful of ketchup, a glass of port wine, a tea-spoonful of made mustard, a little flour, a bit of butter, and salt; boil all together a few minutes, then pour it round the meat.

(*k*) BEEF STEWED A-LA-MODE.—Choose a

piece of thick flank of a fine heifer or ox. Cut into long slices some fat bacon, but quite free from rancidity; let each bit be near an inch thick; dip them into vinegar, and then into a seasoning ready prepared of salt, black pepper, allspice, and a clove, all in fine powder, with parsley, chives, thyme, savoury, and knotted marjoram, shred as small as possible, and well mixed. With a sharp knife make holes deep enough to let in the larding; then rub the beef over with the seasoning, and bind it up tight with tape. Set it in a well-tinned pot over a fire or rather stove; three or four onions must be fried brown and put to the beef, with two or three carrots, one turnip, a head or two of celery, and a small quantity of water; let it simmer gently ten or twelve hours, or till extremely tender, turning the meat twice. Put the gravy into a pan, remove the fat, keep the beef covered, then put them together, and add a glass of port wine. Take off the tape, and serve with the vegetables; or you may strain them off, and send them up cut into dice for garnish. Onions roasted, and then stewed with the gravy, are a great improvement. A teacupful of vinegar should be stewed with the beef.

(*l*) A FRICANDEAU OF BEEF.—Take a nice piece of lean beef; lard it with bacon seasoned with pepper, salt, cloves, mace, and allspice. Put it into a stew-pan with a pint of broth, a glass of white wine, a bundle of parsley, all sorts of sweet herbs, a clove of garlick, a shalot or two, four cloves, pepper, and salt. When the meat is become tender, cover it close; skim the sauce well, and strain it; set it on the fire, and let it boil till it is reduced to a glaze. Glaze the larded side with this, and serve the meat on sorrel sauce.

(*m*) BEEF COLLOPS.—Take some beef that is tender and free from skin, cut it into small thin pieces, hack it with a knife; then butter a stewpan, and put in as much beef as will cover the pan, with a little onion, some cucumber cut small, and salt and pepper. Put it over a quick fire, and give two or three tosses about; two or three minutes will do them. Add a little flour, butter, and water to the stewpan, after taking the collops out to make your gravy. Garnish, if approved, with pickles.

(*n*) BEEF ROBART.—Take the inside of a sirloin of beef, cut it very thin, then fry it in butter just to change the colour; put it in a pan with some gravy, to stew with shalots, anchovy-essence, mushrooms, and oysters. Thicken the gravy, and serve with fried sippets of bread.

(*o*) BEEF PALATES, STEWED.—Simmer them for several hours, till they will peel; then cut the palates into slices, or leave them whole, as preferred; and stew them in a rich gravy till as tender as possible. Before serving them up, season with Cayenne, salt, and ketchup. If the gravy was drawn clear, add also some butter and flour. If to be served white, boil them in milk, and stew them in a fricassee-sauce, adding cream, butter, flour, and mushroom powder, and a little pounded mace.

(*p*) TO STEW AN OX-TONGUE.—Salt a tongue with saltpetre and common salt for a week, turning it every day. Boil it tender enough to peel; when done, stew it in a moderately strong gravy; season with soy, mushroom ketchup, cayenne, pounded cloves, and salt, if necessary. Serve with truffles, morels, or mushrooms. In this receipt the roots must be taken off the tongues before salting, but some fat left.

(*q*) STEWED OX-CHEEK, PLAIN.—Soak and cleanse a fine cheek the day before it is to be eaten; put it into a stewpot that will cover close, with three quarts of water; simmer it after it has first boiled up and been well skimmed. In two hours put plenty of carrots and leeks, two or three turnips, a bunch of sweet herbs, some whole pepper, and four ounces of allspice. Skim it often; when the meat is tender, take it out; let the soup get cold, take off the cake of fat, and serve the soup separate or with the meat. The colour should be a fine brown, which may be effected by adding burnt sugar, or by frying some onions quite brown with flour, and simmering them with it. This last way improves the flavour of all soups and gravies of the brown kind. If vegetables are not approved in the soup, they may be taken out, and a small roll be toasted, or bread fried and added. Celery is a great addition, and should always be served. Where it is not to be got, the seed of it gives quite as good a flavour, boiled-in and strained off.

(*r*) TO STEW A KNUCKLE OF VEAL.—Break the bone in two or three places; put to it five pints of water, eight shalots, a bunch of sweet-herbs, some whole black pepper, a little salt and mace; boil it together till half the water is consumed, then take out the meat, herbs, and spice, thicken with two spoonfuls of flour, and boil it till the flour is sufficiently done; then put back the best of the meat, add two glasses of Madeira wine, lemon-juice, and Cayenne. Two calf's feet improve it much. It should be stewed over a slow fire.

(*s*) A FILLET OF VEAL STEWED WHITE.—Add to one pint of water or gravy a little lemon-peel, mace, nutmeg, white pepper, and salt; put a fillet in, stuffed as for roasting, and when it has stewed one hour and a half take it out, strain the gravy, add two dozen oysters, half a pint of white wine, and butter rubbed in flour; put the veal in again, and stew it half an hour; just before serving, stir in half a pint of cream. The gravy should be rather thick, and poured over the veal.

(*t*) SCOTCH COLLOPS (WHITE).—Cut them off the thick part of a leg of veal, the size and thickness of a crown piece; put a lump of butter in a stewpan, and set it over a slow fire, or it will discolour the collops; lay some of them in before the pan is hot, and turn them over till the butter becomes of the consistence of a thick white gravy; put all together in a pot, and set them on the hearth to keep warm; repeat this till all are fried, then pour the gravy into the pan again, with a tea-spoonful of lemon-pickle, ketchup, caper-liquor, mace, Cayenne pepper, and salt; thicken it with flour and butter; when it has boiled gently five minutes put in the yolks of two eggs, with a teacupful of thick cream; keep shaking the pan over the fire till the gravy looks thick, then put in the collops and shake them till they are quite hot; put them in the dish with balls and pickled mushrooms.

(*u*) SCOTCH COLLOPS (BROWN).—Take a leg of veal, and cut some thin collops; fry them, and season with salt and nutmeg. Boil some gravy, and when they are done pour it into the pan, with ketchup, walnut-pickle, and port-wine, to the taste.

(*v*) TO COLLAR BREAST OF VEAL TO EAT HOT.—Bone the veal, take some thyme, marjoram, pepper, salt, and nutmeg, a little pounded mace, shred suet, crumbs of bread, and a score of oysters; beat all these in a mortar to mix them together, strew the mixture thickly over the veal, then roll it up into a collar, sew it tightly in a cloth, and boil it three hours. Serve with white sauce; forcemeat-balls can be added, if liked.

(*w*) TO STEW A BREAST OF VEAL.—Cut it in pieces and put it into a pot with a bunch of sweet herbs, a small piece of bacon, a little mace, and a few black peppercorns, salt, and one or two onions, and as much water as will cover it. Let it stew well over a slow fire. Boil some peas and lettuce by themselves, and when the veal is stewed enough, strain the liquor from it, and put it into a stewpan with part of the liquor, the peas, lettuce, and a piece of butter, and let them stew again. Thicken with the yolks of two or three eggs and a little flour.

Another Receipt.—Cut it in the middle, bone it, and lay one part on the other, with half a pint of white wine, and gravy made from the bones sufficient to cover it, add mace, cloves, whole pepper, salt, and two anchovies; when sufficiently stewed, put some oysters in, and thicken with flour and butter, after which keep stirring it until it is taken off the fire.

(*x*) FRICANDEAU OF VEAL.—Cut a large piece from the fat side of the leg, about nine inches long, and half as thick and broad; beat it with the rolling-pin; take off the skin, and trim off the rough edges. Lard the top and sides, and cover it with fat bacon, and then with white paper. Lay it in the stewpan with pieces of undressed veal or mutton, four onions, a carrot sliced, a fagot of sweet herbs, four blades of mace, four bay-leaves, a pint of good veal or mutton broth, and four or five ounces of lean ham or gammon. Cover the pan close, and let it stew slowly three hours; then take up the meat, remove all the fat from the gravy, and boil it quick to a glaze. Keep the fricandeau quite hot, and then glaze it; and serve with the remainder of the glaze in the dish, and sorrel sauce in a sauce-tureen.

A Cheaper, but equally good Fricandeau of Veal.—With a sharp knife cut the lean part off a large neck from the best end, scooping it from the bones in lengths about that of the hand, and prepare it the same way as in the last receipt; three or four bones only will be necessary, and they will make the gravy; but if the prime part of the leg is cut off, it spoils the whole.

(*y*) RAGOUT BREAST OF VEAL.—Take a breast of veal, cut off the two ends, and fry the centre in butter till a good brown; then put it into a stewpan with some good gravy and a few small bits of bacon; cover close, and stew till nearly done enough. Take it out, and strain the gravy through a sieve; skim off all the fat, and take as much of the liquor as is required, and thicken it with flour and butter, and flavour with lemon pickle or juice, walnut and mushroom ketchup, or Worcestershire sauce.

(*z*) HARRICOT OF VEAL.—Take the best end of a small neck; cut the bones short, but leave it whole; put it into a stewpan, and just cover with brown gravy. When it is nearly done, have ready a pint of boiled peas, six cucumbers pared and sliced, and two cabbage-lettuces cut into quarters, all stewed in a little good broth; put them to the veal, and let them simmer ten minutes. When the veal is in the dish, pour the sauce and vegetables over it, and lay the lettuce with forcemeat balls around it.

(*a a*) TO STEW LAMB'S HEAD.—Boil the head three-quarters of an hour, the liver a quarter of an hour, and the lights an hour, or rather more. Rub the head with the yolk of an egg; add some parsley, lemon-peel, a very small quantity of thyme, pepper, salt, nutmeg, and some bread-crumb. Grill it, make brain-cakes the same as for calf's head, or forcemeat, and serve in some very rich gravy; and if it is not thick enough, add a little flour and butter, just before taking it off the fire.

1556. STEWED POULTRY, GAME, &C.:—

(*a*) TO STEW FOWL WITH RICE.—Stew the fowl very slowly in some clear mutton-broth, well-skimmed, and seasoned with onion, mace, pepper, and salt. About half an hour before it is ready, put in a quarter of a pound of rice, well washed and soaked. Simmer till tender; then strain it from the broth, and put the rice on a sieve before the fire. Keep the fowl hot, lay it in the middle of the dish, and the rice around it, without the broth. The broth will be very nice to eat as such; but the less liquor the fowl is done with the better. Gravy, white sauce, or parsley and butter, for sauce.

(*b*) TO STEW A TURKEY OR FOWL.—Pick the fowl very clean, put it into a saucepan, with cabbage, turnips, celery, and onions, all cut very small; add salt and pepper, with a bunch of sweet-herbs, then just cover with water, and let it stew as slowly as possible till quite tender. This mode of cooking is chiefly adopted for an old fowl.

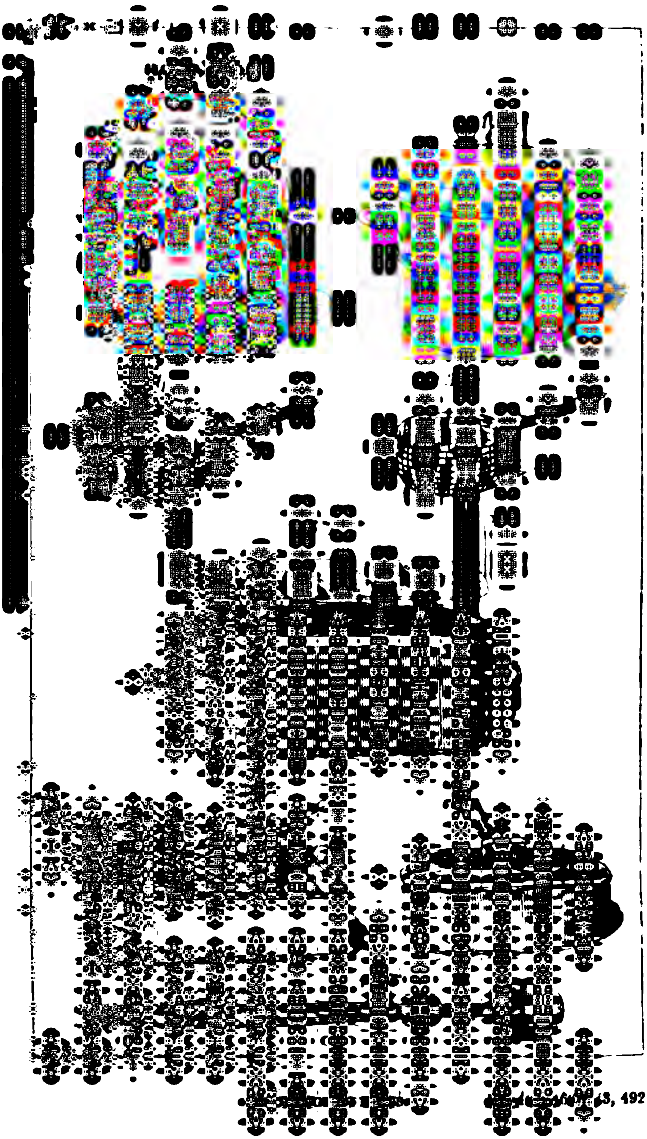
(*c*) TO STEW PIGEONS.—Take six pigeons, cut the flesh from one, and with the livers from all and a good slice of fat bacon, beat all together well in a mortar. Then take a few sweet-herbs and a little shalot and mix with the above to stuff the pigeons. Cut off their legs and pinions; stew the bones and trimmings to make gravy (and add a little mutton if required); then put the pigeons into the gravy, when cleared of all bones and meat, with their breasts downwards, turning them carefully till they are done. Add a little port-wine, thickened with flour and butter, and put in a little walnut pickle.

(*d*) TO STEW A HARE.—Skin the hare, and cut it in small pieces, but do not wash it; stew it in butter till the blood is set, then put to it some gravy, with a bunch of sweet-herbs, two onions, a few cloves, a little mace, and black pepper; when it is stewed enough, strain off the butter, and put to it two or three spoonfuls of port-wine, and a little lemon juice; then thicken it with butter and flour, and season with salt to the taste. Oysters, mushrooms, and eggs boiled hard, with a little anchovy, are an agreeable addition.

(*e*) TO JUG A HARE.—Skin the hare and clean it, cut it up scientifically, and put it in a pan with a bouquet of sweet herbs and parsley, also an onion adorned with cloves, a blade of mace, a glass of port-wine, and rather more water than will cover it. Put it on the stove and let it stew very gently till the meat is done, then take it off and thicken the gravy; when sufficiently boiled pass it through a sieve, then add a little ketchup soy, and Cayenne to the taste, and pour it over the hare. Take care to have it dished up hot, and some add to it a few forcemeat-balls.

(*f*) TO STEW A DUCK OR GOOSE.—Half-roast a duck or goose; put it into a stew-pan with a pint of beef gravy, a few leaves of sage and mint cut small, pepper and salt, and a small bit of onion shred as fine as possible. Simmer a quarter of an hour, and skim clean; then add near a quart of green peas. Cover close, and simmer near half an hour longer. Put in a piece of butter and a little flour, and give it one boil; then serve in one dish.

(*g*) TO STEW GIBLETS.—After very nicely cleaning goose or duck-giblets, stew them for several hours with a small quantity of water, onion, black pepper, and a bunch of sweet herbs, till nearly done; season them with salt and pepper, and a very small piece of mace. Before serving, give them one boil with a cup of cream, and a piece of butter rubbed in a tea-spoonful of fine flour.



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CHAP. VI.

FRYING OR *SAUTEING*, BROILING, TOASTING, AND BRAISING OF ANIMAL FOOD.

Sect. 1.—Frying.

1557. This method of cooking is universally adopted among all classes and in all nations where iron vessels are to be obtained. The French *sauté* is nothing more than their method of frying, but carried out with rather more care than usual. Whether in French or English cookery, however, frying is *boiling in oil or fat;* the chief difference being that in our country only a little of this material is put into a shallow pan, while in France they half fill a somewhat deep iron vessel with oil or lard, and when this is hot enough they immerse the article to be fried in the oil till sufficiently brown. In French kitchens a vessel is set apart to receive this oil from day to day, and the same quantity serves for months together by straining it through a sieve—so that none is lost excepting that which is absorbed by the food in the process. In point of economy, therefore, the French beat us here, as in our method the fat left in the pan is seldom preserved till the next time, but it goes into a wash-tub or some other waste receptacle. Besides this loss, there is a still greater one occasioned by the mode in which the frying is conducted. In the French plan the fat or oil is first heated to such a temperature that it will convert water into steam directly a drop falls upon it, making it "spit," as the cooks say. At this stage the meat, or other article, is immersed, by which a coating of coagulated albumen is immediately made, soon to be partially carbonized or browned, but so rapidly formed that scarcely any juice is allowed to escape, and therefore the nourishing particles are not wasted; and as the whole is immersed the action is simultaneous on all sides. Contrast this with the English method, and it will be found that here as soon as the lard is melted the steak or other article is put into the pan, which is soon raised to a very high temperature, and contracts the fibrinous matter on the lower side, *squeezing the gravy out on the upper*, from which it may be seen to ooze in a full stream; and it is not until it is turned downwards that this is at all checked. The consequence of this is that not only is there a great waste of nutritious matter, but the lard is mixed with a great quantity of good gravy, which is so rich that it is generally mixed with a little flour and spice, and eaten with the steaks. It is from this custom that the French do not understand dressing a beefsteak in the English fashion, but when frying it they do it to perfection in every respect but the gravy, which being deficient from the nature of the process, is supplied by some sauce or other poured over it. A broiled steak they can accomplish, *if they can get the meat;* but beef in Paris fit for such a process is rather rare. Hence it is that for steaks, when they are to be fried, the English method is really to be preferred; while for every other operation done in the fryingpan, the French plan will be found vastly superior.

1558. The Fryingpan should be, in some measure, proportioned to the size of the article to be fried, especially on the English plan; but for the French method, one large enough for a full-sized sole will equally serve for a sprat or a single cutlet. The English fryingpan is generally round and shallow, that is, about two inches deep. On the other hand, the French pan should be six or eight inches deep, and fitted with a lining of open wire-work, so that when sufficiently done, the article or articles may be raised out of the fat, and suffered to drain for a few seconds, without which they will be oily and gross, while with it they become crisp, and so free from grease that they do not even soil a napkin when in contact with it. The metal is iron, and the bottom should be tolerably thick (see *figs.* 131 and 132).

1559. Fat of some kind is essential to frying, and it may be either *olive-oil*, or *lard*, or *bacon-fat*, or *clarified dripping*, or *suet*, or *butter*, or even the *skimmings of the stock-pot*. Olive-oil requires great care in its use, being very apt to burn, and not answering the purposes of English frying; but for the more delicate kinds of fish, or indeed for any kind of *sautés* (see par. 1557), oil is capable of being made use of in the fryingpan to great advantage. Lard and Butter answer well for any purpose, as do suet and dripping, or even the skimmings when clarified, the proper mode of doing which will be given in the next paragraph.

1560. To Clarify Dripping, or Skimmings.—Put either into a clean saucepan over a stove, hot plate, or small fire. Melt it very slowly, and skim till quite clear at the upper part; let it just boil for a second, then strain it through a sieve, and let it get cold. There will always be more or less watery gravy at the bottom, but the upper part will be clear fat, free from admixture with any other matter, and quite good enough for any ordinary fryings, or for basting meat.

1561. To Clarify Lard or Suet.—The

kidney-fat of either animal must be cut into small pieces, and must then be put into a water-bath, or in a cool oven, or on a very cool hot-plate or stove; the slightest increase of temperature more than sufficient to liquefy the fat gives a taste of burning, which is not pleasant. If there is no water-bath at hand, an earthenware jar immersed in a saucepan of water, and covered over with a saucepan-lid, answers all the purpose. Whichever plan is adopted, the process must be very slow, as the cells in which the fat lies take a long time to empty themselves. When the lumps have shrunk almost to nothing, strain the whole through a sieve, and increase the heat a little for the remaining portion; the water-bath not being sufficient to extract all the fat. Keep this last part separate, as it is only fit for frying, and not for pastry. Tie down the jar when cold, and either suet or lard will then keep a long time.

1562. **The Fire for Frying** should be clear of black coals, and consequently of blaze, but only just burnt up; and there should be a good light above, for the cook to judge by the eye of the progress of her cookery. Care must, of course, be taken not to set fire to the fat.

1563. **In Frying**, first heat the pan and the fat in it (whether on the English or French plan), till it has ceased to hiss or "spit," and will immediately turn brown a small piece of bread. Then either put the article in on the bottom, and turn it as soon as the under side is brown, turning it back again to complete the process. Many articles are put into the fryingpan without any preparation beyond reducing them to a proper thickness; but others are coated with bread-crumb, which is made to adhere by white of egg. In the French plan there is little or no necessity for turning, and after introducing the wire-lining, and properly heating the fat, the article to be fried is smoothly dropped in, and suffered to remain quietly until it is quite brown enough, when it is removed by the wire-lining, and drained over the pan for about half a minute. In any case where bread-crumb is used, and especially in frying fish, the oil or fat remaining should be imbibed either by blotting paper or a clean white cloth, changing these until they are not stained; but if the oil or fat is hot enough, it runs off so completely while in the wire that nothing is left behind.

1564. **Receipts for Frying Meats, &c.**:—

(*a*) **To Fry Steaks or Chops.**—Let the steaks be cut from the rump in rather thin layers, and the chops be as usual. Then fry in lard or dripping in the English manner (see par. 1557 and 1563), turning them repeatedly until done. When ready, keep them hot in a dish by the fire, while making the gravy, which is done as follows:—Pour off as much of the fat as possible, but leaving behind all the gravy or coloured part (there must be, at least, altogether two table-spoonfuls of gravy, or gravy and fat). Thicken this with a table-spoonful of flour, stirred into it dry; put the pan on the fire, and brown it slightly, then add a table-spoonful of ketchup (mushroom or walnut), a table-spoonful of Worcestershire sauce, or a little of mixed pickle chopped up, pepper and salt slightly, and reduce to a proper degree of thickness by adding hot water by degrees. Large onions sliced are sometimes fried with beef-steaks, or pickled mushrooms, and served with them, in which case they are taken out with the steaks, and the sauce made afterwards in the same way as above. If onions or mushrooms are not liked, it is usual to garnish with scraped horseradish, or pickles.

(*b*) **Sausages** require rather a different management to prevent their bursting, in which case there would be a loss by the escape of their contents; and if it is avoided it is clear that a great saving is effected. Pricking with a needle or fork will have that effect; but it lets out their gravy, and is, therefore, to be avoided. The way to dress them is to put them into a fryingpan, with the fat all cold, then keep gently shaking the pan every half minute, so as to change the position of the sausages, and to heat them gradually, by which the bursting will be prevented. If the French method is adopted, they *must* be pricked, and then will certainly taste very crisp; but they will be too much soaked with oil for most palates, and will have lost their peculiar flavour in great measure. In the English method a toast should be fried with them, putting it in only for a few minutes towards the last, and they are served upon it. A gravy for them *may* be made, if desired, in the same way as for steaks (see last paragraph); but it is not usual.

(*c*) **Cutlets** are cut from a leg of veal, about a third of an inch thick, and of such a size as may be preferred. Fry them in plenty of *hot* lard or dripping on the French plan, or if the English is used, turn them quickly. Before putting them into the pan they are to be coated evenly with white of egg well beaten, using an egg-brush, and then dipping them in finely-powdered stale bread-crumb. They should be fried a delicate brown, and carefully drained from the fat. For gravy, some other meat must be had recourse to, as there is too little from veal in the fryingpan to make it of. The bone taken out of the fillet with part of the knuckle will boil down and make a good stock, browning it in the usual way (see Gravies), and flavouring with a little mushroom ketchup and Worcestershire sauce; adding also a sprig of lemon thyme and a blade of mace. Some fresh parsley should be fried quite crisp after the cutlets are done, and laid on the top; and it is usual to fry with them some thin slices of ham or bacon rolled, which are put round the dish, the gravy being poured into it, but not over the cutlets.

(*d*) **Sweetbreads** are fried exactly like cutlets.

(*e*) **Mutton and Lamb Cutlets** are fried with the bread-crumb just like the veal cutlets; and if fried in the English fashion, they generally give out enough gravy to serve without anything extra but the articles described under (*a*).

(*f*) **Pork Chops** are best fried in the French fashion, when, however, they require a made-gravy. When this is not at hand, keep back the last spoonful of the lard, and use this as described at (*a*), adding a chopped onion and a tea-spoonful of mustard to the flour, and a table-spoonful of Worcestershire sauce or pickle to the water.

(*g*) **To Fry Sheep's Pluck or Pig's Fry.** Boil the lights first, then chop them up, and put them to stew with a little broth or gravy, seasoning with pepper and salt. Thicken the gravy; and if not brown, add a little of the gravy from the fryingpan, which, when the liver, &c., have been *fried*, is made by adding some flour and water to the contents of the fryingpan. Fry the liver as for steaks or chops (*a*), then place it round the dish, with the minced lights in the centre. The heart should be stuffed and roasted, to form a separate dish.

Sect. 2.—Broiling.

1565. **Broiling** differs from frying, in the fact that there is no addition of oil or fat; and that the effect is produced by the direct radiation of heat from a clear fire, the broiling article being supported over it by a gridiron. As a necessary consequence, the gravy *will* ooze out from the upper side, and is generally lost by falling into the fire. This may partially be avoided by the use of a particular gridiron, which will presently be described.

1566. **The Ordinary Gridiron** is merely a square frame of iron, with cross-bars of the same. An improvement upon this consists in making the upper surface of these bars concave or grooved, and all terminating in a hollow in the handle, so as to save a little of that rich gravy which would otherwise fall into the fire. In theory this is very pretty, but in practice there is not much gain, as the bars do not bear a very large relative proportion to the open spaces between, and consequently they do not catch a great deal of the gravy. Before using a gridiron, it should be clean, and the upper surface should be well greased with lard or dripping, to prevent its sticking; and it should be set slanting downwards towards the hand of the cook. **A Pair of Steak-tongs** are required for really-artistic broiling, but most ordinary cooks are content with the common fork.

1567. **The Fire for Broiling** must be very clear, and free from smoke or flame. Charcoal, coke, or wood, is the best, but good coals, at a certain stage, answer every purpose. A little salt thrown on the fire makes it burn much more clearly, and frees it from smoke.

1568. **In Broiling**, after heating and larding the gridiron, put on the steak, chop, or other article, and continually turn it every half-minute, moving it gently all the time, to avoid the marks left by the bars if suffered to remain still. It is rather difficult to judge of the time when it is sufficiently done, especially as different people have such very different ideas of the proper degree of dressing. Nothing but experience, and ascertaining whether they are liked well-done or under-done, will ensure satisfaction. When the concave enamelled gridiron is used, a little gravy, of good flavour, may be served; but, otherwise, either the steak or chop must be eaten plain, or a made-gravy must be prepared beforehand. It is usual to dredge broiled articles with salt and pepper, mixed, and sometimes having a little mushroom powder (see par. *a*, 1408) added to them.

1569. **Receipts for Broiling.**

(*a*) **Broiled Steaks** should be cut from a well-kept rump, and they are generally liked about three-quarters of an inch thick. Most cooks beat them well with a rolling-pin for ten minutes, but if the meat is of good quality, and the rump has been well kept, there will be no necessity for this. Just before finishing, rub a lump of butter over, and lightly dredge with pepper and salt, adding the mushroom powder at discretion. Pickles and scraped horseradish make a good garnish, and for sauce (see Meat Sauces).

(*b*) **Mutton Chops** are done exactly like steaks, except that from their bones they will not bear beating. They are served in their own sauce or with the appropriate sauce (see Sauces).

(*c*) **Fowls or Pigeons** are broiled. The former are cut open (called spread eagles) down the back, and then pressed quite flat under a strong plate. After this the inside is wiped, and they are laid on the gridiron over rather a slow fire (for broiling), with their insides downwards first, to keep in the gravy by hardening that surface. When brown, turn them upwards, and continue till they are well done. Pigeons are generally done whole, but may also be split. They are served with pickled mushrooms and made-sauce, or with pickled eggs and parsley and butter.

(*d*) BROILED KIDNEYS should be split open, scored, and peppered as well as salted. They are then kept open by a fine iron skewer, and placed flat upon the gridiron, after which they are soon done. They require no gravy or garnish.

SECT. 3.—TOASTING MEATS, &c.

1570. CHOPS, KIDNEYS, PIGEONS, &c., may be done very effectually and nicely before the fire in a small Dutch oven or hanging oven. (See par. 1516, and *fig.* 112.) They require occasional turning and basting, and the process is certainly more like roasting than frying or broiling

SECT. 4.—BRAISING.

1571. BRAISING is only a very elaborate method of baking or broiling, which has been introduced from France into this country of late years. It is, in fact, an air-tight oven, placed on a stove, with a braising-iron on the top, so that the heat descends as well as ascends, and yet it is so graduated that it does not cause much of the steam to escape. Although considered a French novelty, it differs in no respect from the old English "jugging," in which a hare is placed in a jar, covered over closely, and then deposited in an oven, by which the same kind of heat is communicated; and I fully believe there is no cook who could tell a braised turkey done in the most artistic way from another deposited in a braising-pan and then placed in an oven at the required temperature. All the old receipts for stewing in covered pans in the oven depend upon the same principle; that is, that the article to be stewed should nearly fill the dish or jar, and should in that state, with very little but its own juice, be submitted to a low dry heat, with closed doors to obviate the loss by evaporation. A braising-pan is certainly a most convenient mode of carrying out the process, either with or without the oven, but it is by no means essential to it.

CHAP. VII.

ON THE COOKING OF FISH BY BOILING, FRYING, &c.

SECT. 1.—GENERAL REMARKS.

1572. THE VARIOUS KINDS OF FISH, with their seasons, and the best modes of procuring them, as well as their ordinary prices, will be found given at length in pages 262 to 274.

1573. IN CLEANING FISH, it is only necessary to remove the gills, and slit open the belly to take out the intestines, liver, &c., using plenty of fresh water; but if the fishmonger does not perform his duty, fish is seldom very nicely cleaned; but in great towns it is washed beyond what is necessary for cleaning, and by perpetual watering diminishes in flavour. When quite clean, if to be boiled, a table-spoonful of salt and two of vinegar should be put into the water to give firmness. Turbot, cod, whiting, and haddock, are far better if rubbed over with salt, and kept a day; and if it is not very hot weather, they will be good for two days (see par. 1506). Fresh-water fish has often a muddy smell and taste, to take off which, soak it in strong salt and water after it is nicely cleaned; or if of a size to bear it, scald it in the same; then dry, and dress it.

SECT. 2.—UTENSILS

1574. FOR BOILING SMALL FISH, saucepans or fish-kettles, of various sizes are required; and for large and long fish, like salmon and turbot, a full-sized kettle called a turbot-kettle, of tin, is the proper article, containing a false bottom perforated with holes to lift the fish out with in order to avoid breaking it (see *figs.* 133 and 134). For frying or broiling fish, nothing more is wanted than the ordinary fryingpans and gridirons. (See par. 1558.)

SECT. 3.—BOILING, FRYING, AND BROILING FISH.

1575. BOILING.—After cleaning and adding salt and vinegar (see par. 1573), the fish must be put into the water while cold, and set to boil very gently, or the outside will break before the inner part is done. The water should also be carefully skimmed, or the fish will look dirty, from the scum setting on it as it is taken out. Crimped fish should be put into boiling water; and when it boils up, pour a little cold water in to check extreme heat, on the principles advocated by Liebig, and explained at par. 1543; after which simmer the fish for the proper number of minutes. If the fish is large, the fish-plate on which it is to be done may be drawn up to see if it is ready, when it will leave the bone. It should then be immediately taken out of the water on the plate, or it will soon be woolly. The fish-plate should be set crosswise over the kettle, to keep hot for serving; and a clean cloth should cover the fish to prevent it losing its colour.

1576. FOR FRYING FISH, it ought to be wrapped in a nice soft cloth, after it is well cleaned and washed. When perfectly dry, wet with an egg, and sprinkle the finest crumbs of bread over it; if done a second time with the egg and bread, at an interval of five minutes, the fish will look much better. Then, having a thick-bottomed and deep frying-pan on the fire, with a large quantity of lard or dripping boiling-hot, plunge the fish into it, and let it fry rather quickly, till the colour is of a fine brown-yellow, and it is judged ready. If it is done enough before it has obtained a proper degree of colour, the cook should draw the pan to the side of the fire, carefully take it up, and either place it on a large sieve turned upwards, and to be kept for that purpose only, or on the under side of a dish, to drain; and if wanted to look very well, a sheet of cap-paper must be put to receive the fish, which should have a beautiful colour, and all the crumbs should appear distinct; the fish being free from all grease. The same dripping, with a little fresh, will serve a second, third, and fourth time (see par. 1557). Butter gives a bad colour; oil fries of the finest colour for those who will allow the expense. It is customary to garnish with a fringe of curled raw parsley, or parsley fried, which must be thus done:—When washed and picked, throw it again into clean water; when the lard or dripping boils, throw the parsley into it immediately from the water, and instantly it will be green and crisp, and must be taken up with a slice; this may be done after the fish is fried.

1577. IF FISH IS TO BE BROILED, it must be seasoned with pepper and salt, floured, and put on a gridiron that is very clean; which, when hot, should be rubbed with a bit of suet to prevent the fish from sticking. It must be broiled on a very clear fire, that it may not taste smoky; and not too near, that it may not be scorched.

1578. THE TIME required to dress fish will be appended to each kind; but this must be considered only as a slight guide to enable the cook to calculate when to put her fish on the fire, as the reliable test is to be found only in the exact state of the fish itself and the readiness of the flesh to leave the bone.

1579. SPECIAL DIRECTIONS FOR DRESSING RIVER FISH:—

(*a*) TO FRY TROUT AND GRAYLING.—Scale, gut, and well wash; then dry them, and lay them separately on a board before the fire, after dusting some flour over them; or they may be egged and crumbed according to the directions given at par. 1576. Fry them of a fine colour, with fresh dripping. Serve with crimped parsley and plain butter. Time, from five to eight minutes.

(*b*) TROUT A-LA-GENEVOISE.—Clean the fish very well; put it into a stew-pan, adding half Champagne and half Moselle, or Rhenish, or sherry wine. Season it with pepper, salt, an onion, a few cloves stuck in it, and a small bunch of parsley and thyme; put in it a crust of French bread; set it on a quick fire. When the fish is done, take the bread out, bruise it, and then thicken the sauce with it; add flour and a little butter, and let it boil up. See that the sauce is of a proper thickness. Lay the fish on a dish, and pour the sauce over it. Serve it with sliced lemon and fried bread.

(*c*) PERCH, DACE, ROACH, AND GUDGEON may be dressed in either of the above modes.

(*d*) PERCH, TENCH, AND CARP.—TO BOIL.—Put them into cold water, boil them carefully, and serve with melted butter and soy. Perch are most delicate fish. They may be also stewed; but in stewing they do not preserve so good a flavour. Time, five to fifteen minutes.

TO STEW.—Scald and clean, take care of the roe, &c., lay the fish in a stewpan, with a rich beef-gravy, an onion, eight cloves, a dessert-spoonful of Jamaica pepper, the same of black, add port wine to the extent of a fourth part of the quantity of gravy (cider may do); simmer closely covered. When nearly done, add two anchovies chopped fine, a dessert-spoonful of made mustard, and some fine walnut ketchup, a bit of butter rolled in flour; shake it, and let the gravy boil a few minutes. Serve with sippets of fried bread, the roe fried, and a good deal of horseradish and lemon.

To Bake.—Clean a large carp; put in a stuffing as for veal (see Forcemeat); sow it up, brush it all over with yolk of egg, and add plenty of crumbs; then drop on the top some oiled butter to baste it; place the carp in a deep earthen dish, with a pint of stock, a few sliced onions, some bay-leaves, a fagot of herbs (such as basil, thyme, parsley, and both sorts of marjoram), half a pint of port wine, and six anchovies; cover over the pan, and bake it an hour. Let it be done before it is wanted. Pour the liquor from it, and keep the fish hot while you heat up the liquor with a good piece of butter rolled in flour, a tea-spoonful of mustard, a little Cayenne, and a spoonful of soy. Serve the fish on the dish, garnish with lemon, parsley, and horseradish, and put the gravy into the sauce-tureen.

(*e*) Eels.—To Spitchcock.—Take one or two large eels, leave the skin on, cut them into pieces of three inches long, open them on the belly side, and clean nicely; wipe them dry, and then wet them with beaten egg, and strew over on both sides chopped parsley, pepper, salt, a very little sage, and a bit of mace pounded fine and mixed with the seasoning; rub the gridiron with a bit of suet, and broil the fish of a fine colour. Serve with anchovy and butter for sauce.

To Fry.—If small, should be curled round and fried, being first dipped into egg and crumbs of bread. If large, they should be *skinned* and cut into lengths, after which they are treated like the small ones.

To Boil.—The small ones are best. Do them in a small quantity of water, with a good deal of parsley, which should be served up with them and the liquor. Serve chopped parsley and butter for sauce. Time required, from ten to fifteen minutes.

To Collar.—Bone a large eel, but do not skin it; mix pepper, salt, mace, allspice, and a clove or two, in the finest powder, and rub over the whole inside; roll it tight and bind with a coarse tape; boil in salt and water till done, then add vinegar, and when cold keep the collar in pickle. Serve it either whole or in slices. Chopped sage, parsley, and a little thyme, knotted marjoram, and savoury, mixed with the spices, greatly improve the taste.

To Stew.—Cut them in short pieces; fry them a little, then put them in a stew-pan and season with salt, pepper, and nutmeg; just cover with gravy, then put in one onion stuck with eight cloves, some mace, lemon-peel, and a little horseradish; when half done add a handful of parsley cut small, a quarter of a pint of port-wine, and a quarter of a pound of fresh butter.

(*f*) Lampreys.—To Stew.—Put together spice enough in the following proportions, to rub in every part of the fish: one-fourth of mace, three-fourths of cloves pounded, as much pepper as the two, and nearly as much salt as the whole, adding a little Cayenne; stew down one calf's foot (or other good stock) as stiff as possible, taking the fat from it when cold; add to this jelly equal quantities of rough cider, walnut ketchup, and mushroom ketchup, making in the whole sufficient to cover the fish, which must be pinned up round to the size of the earthen pot intended to contain it; keep it in the stewpan for an hour, letting it stew as slowly as possible, adding to it a glass of port-wine ten minutes before taking it up. It will do if the above are put into an earthen pot and set in the roaster or oven; an anchovy, a little lemon-pickle, and mushroom essence will be an improvement.

To Pot.—The above seasoning, without the gravy, is right for potting lampreys, merely letting the fish stew for an hour in its own gravy, then putting it into pots, and pouring melted butter over it when cold.

(*g*) To Stew Lamperns.—The lamperns should be well cleaned in salt and boiling water with a whisk; put them to stew gently in a small quantity of good cider for about half an hour, then add some strong gravy and a sufficient quantity of spice mixed as above to make the dish palatable; after stewing till they are tender, add some port-wine and a little walnut ketchup, with flour to thicken the gravy. Garnish the dish with horseradish.

(*h*) To Bake Pike, or Bream.—Scale the fish, and open as near the throat as possible, then clean and stuff it with the following: grated bread, herbs, anchovies, oysters, suet, salt, pepper, mace, half a pint of cream, four yolks of eggs; mix all over the fire till it thickens, then put into the fish and sew it up; put butter over it in little bits and bake it. Serve sauce of gravy, butter, and anchovy.

(*i*) To Fry Flounders.—Let them be rubbed with salt inside and out, and lie two hours to give them some firmness. Dip them into egg; cover with crumbs, and fry them.

(*j*) Water Souchy.—Stew two or three flounders, some parsley leaves and roots, thirty peppercorns and a quart of water, till the fish are boiled to pieces; pulp them through a sieve. Set over the fire the pulped fish, the liquor that boiled them, some perch, tench, or flounders, and some fresh leaves and roots of parsley; simmer all till done enough, then serve in a deep dish. Slices of bread and butter are to be sent to table, to eat with the souchy.

(*k*) Salmon and Salmon Trout.—To

Boil.—Clean it carefully, boil it gently, putting it in cold water, and take it out of the water as soon as done. Let the water be boiling if the fish is crimped or split in slices. If under-done it is very unwholesome. Serve with shrimp or anchovy sauce. Salmon takes nearly as long as meat, and for a large fish a quarter of an hour per pound will not be too much to allow.

To Broil.—Cut slices an inch thick, and season with pepper and salt; lay each slice in half a sheet of white paper well buttered, twist the ends of the paper, and broil the slices over a slow fire six or eight minutes. Serve with raw pickles and anchovy sauce.

To Pot.—Take a large piece, scale and wipe, but do not wash it; salt very well, let it lie till the salt is melted and drained from it, then season with beaten mace, cloves, and whole pepper; lay in a few bay leaves, put it close into a pan, cover it over with butter, and bake it; when well done, drain it from the gravy, put it into the pots to keep, and when cold cover it with clarified butter.

To Curry.—Broil slightly as above; then mix half an ounce of curry-powder to each pound of fish, with a good gravy or stock; stew gently in this for half an hour, and serve with rice as usual (see Curry, under Made-dishes).

To Kipper.—Cut the fish down, take out the inside and roe. Rub the whole with common salt after scaling it; let it hang twenty-four hours to drain. Pound three or four ounces of saltpetre, according to the size of the fish, two ounces of bay salt, and two ounces of coarse sugar; rub these, when mixed well, into the salmon, and lay it on a large dish or tray two days, then rub it well with common salt, and in twenty-four hours more it will be fit to dry; wipe it well after draining. Hang it either in a wood chimney or in a dry place, keeping it open with two small sticks, or rub with brown pyroligneous acid (see par. 1394). Kippered salmon is eaten broiled in paper, and only just warmed through, with egg sauce and mashed potatoes; or it may be boiled, especially the part next the head.

To Pickle.—After the salmon has been boiled as usual, let it drain till quite dry on a fish-drainer or cloth; then put it into some of the following pickle:—Take of the water in which the fish was boiled and vinegar equal quantities, to which add a few peppercorns, a little mace, and a very little allspice; boil for a few minutes, and let it stand till cool. The spice may be varied according to the taste; in twelve hours it is fit to be used; but it will keep for weeks in cool weather, or in the summer by the addition of a little ice occasionally

To Collar.—Split such a part of the fish as may be sufficient to make a handsome roll, wash and wipe it, and having mixed salt, white pepper, pounded mace, and Jamaica pepper, in quantity to season it very high, rub it inside and out well. Then roll it tight and tie it up with broad tape, put as much water and one-third vinegar as will cover it, with bay-leaves, salt, and both sorts of pepper. Cover close, and simmer till done enough. Drain and boil the liquor quickly, and put on when cold. Serve with fennel. It is an elegant dish, and extremely palatable.

1580. Special Directions for Cooking Sea Fish:—

(*a*) To Boil Turbot, Brill, or Plaice. The turbot-kettle must be of a proper size, and in the nicest order. Do not skin the fish, as I have known done by an ignorant cook. Set it in cold water sufficient to cover it completely, throw a handful of salt and a glass of vinegar into it, and let it gradually boil; be careful that no blacks fall; but skim it well, and thereby preserve the beauty of the colour. Sprinkle the belly, or white side, with the roe of the lobster, and turn that side up. Serve it garnished with a complete fringe of curled parsley, lemon, and horseradish. The sauce should be the finest lobster, shrimp, or anchovy, and plain butter, served plentifully in separate tureens. Time, about two minutes per pound.

To Fry.—Sprinkle with salt, and keep twenty-four hours; then wash and wipe it dry, wet over with egg, and cover with crumbs of bread; make some lard, or fine dripping, and two large spoonfuls of vinegar boiling hot; lay the fish in, and fry it a fine colour, drain it from the fat, and serve with fried parsley round, and anchovy sauce. This mode is particularly adapted for plaice.

(*b*) Soles are skinned, and may be boiled in the same way as turbot. They are served with plain butter, or parsley and butter. Time, about five or six minutes per fish.

To Fry.—Skin them, and dry carefully with a cloth; then dip in egg and bread-crumb, and fry as directed in par. 1576.

As Cutlets.—Take two or three soles, separate the flesh from the back-bone, and take off the heads, fins, and tail. Sprinkle the inside with salt, roll them up tight from the tail end upwards, and fasten with small skewers. If large or of middling size, put half a fish in each roll—small do not answer. Dip them into yolks of eggs, and cover with crumbs. Do the egg over them again, and then put more crumbs, and fry them a beautiful colour in lard, or, for fast-days, in clarified butter.

(*c*) To Boil Cod-fish.—Some people boil the cod whole; but a large head and shoulders contain all the parts that it is proper to dress, the thinner parts being overdone and tasteless before the thick are ready. But as the whole fish may be purchased at times more reasonably, the lower half may be sprinkled with salt, and hung up, when it will be in high perfection in one or two days. Or, it may be made more salt, and served with egg sauce, potatoes, and parsnips, as salt-fish. Cod, when small, is usually very cheap. If boiled quite fresh, it is watery; but eats excellently, if salted and hung up for a day to give it firmness, then stuffed and broiled. Boiled cod's head and shoulders will be firmer, and have a better flavour, if a little salt is rubbed down the bone, and along the thick part, even if it is to be eaten the same day. Tie it up, and put it on the fire in cold water which will completely cover it; throw a handful of salt into this with a couple of spoonfuls of vinegar. Great care must be taken to serve it without the smallest speck of black or scum. Garnish with a large quantity of double parsley, lemon, horseradish, and the milt, roe, and liver, and fried smelts, if approved. If with smelts, be careful that no water hangs about the fish; or the beauty of the smelts will be taken off, as well as their flavour. Serve with plenty of oyster or shrimp sauce, and anchovy and butter. Time, about three minutes per pound.

Crimped Cod, or Slices of Cod, must be put into boiling water, and after a space of three minutes, dash in cold water to lower the temperature; then finish as above.

To Fry or Broil slices of cod-fish, proceed as directed in the general remarks at par. 1576.

Curry of Cod should be made of sliced cod, that has either been crimped or sprinkled for a day with salt to make it firm. Fry it of a fine brown with onion; and stew it with a good white gravy, a little curry powder, a bit of butter and flour, three or four spoonfuls of rich cream, salt, and add Cayenne, if the powder is not hot enough.

(*d*) To Dress Salt Cod.—Soak and clean the piece to be dressed, then lay it all night in water, with a glass of vinegar. Boil it enough, then break it into flakes on the dish; pour over it parsnips boiled, beaten into a mortar, and then boiled up with cream and a large piece of butter rubbed with a bit of flour. It may be served as above with egg sauce instead of the parsnip, and the latter sent up whole. *Or*, the fish may be boiled and sent up without flaking, and sauces as above. Time, the same as for fresh cod.

Salt Fish which is too strong to be eaten dressed in this way, will be much improved by boiling it, and then mashing it up with potatoes in equal quantities, and browning before the fire in a Dutch oven.

(*e*) Cod Sounds Boiled.—Soak them in warm water half an hour, then scrape and clean; and if to be dressed white, boil them in milk and water; when tender serve them in a napkin with egg sauce. The salt must not be much soaked out, unless for fricassée.

To Look like Small Chickens.—Wash three large sounds nicely, and boil in milk and water, but not too tender; when cold, put a forcemeat of chopped oysters, crumbs of bread, a bit of butter, nutmeg, pepper, salt, and the yolks of two eggs; spread it over the sounds, and roll up each in the form of a chicken, skewering it; then lard them as you would chickens, dust a little flour over, and roast them in a tin oven slowly. When done enough, pour over them a fine oyster sauce. Serve for side or corner dish.

To Broil.—Scald in hot water, rub well with salt, pull off the dirty skin, and put them to simmer till tender; take them out, flour, and broil. While this is being done, season a little brown gravy with pepper, salt, a tea-spoonful of soy, and a little mustard; give it a boil with a bit of flour and butter, and pour it over the sounds.

En Ragout.—Prepare as above; then stew them in white gravy, seasoned, cream, butter, and a little bit of flour added before you serve, gently boiling up. A bit of lemon peel, nutmeg, and the least pinch of pounded mace should give the flavour.

(*f*) Haddocks and Whiting.—To Boil.—Treat like cod-fish, the allowance for time being very nearly the same, unless very small, when it may be reduced one-third.

To Dry.—Choose them of two or three pounds weight; take out the gills, eyes, and entrails, and remove the blood from the backbone; wipe them dry, and put some salt into the bodies and eyes; lay them on a board for a night, then hang them up in a dry place, and after three or four days they will be fit to dress; skin and rub them with egg, and strew crumbs over them; lay them before the fire, and baste with butter until brown enough. Serve with egg sauce.

Whitings, if large, are excellent in this way; and it will prove an accommodation in the country where there is no regular supply of fish.

(*g*) Skate, Thornback, and Maids (all usually sold as *skate*), should be hung one day at least before dressing. They may be boiled in slices (called crimped), or fried in crumbs with egg, or in butter.

(*h*) Mackerel.—Boil till the tail splits, and serve with butter and fennel. The time is usually about ten, fifteen, or twenty minutes, according to size.

To Broil them, split them and sprinkle with herbs, pepper, and salt; or stuff with the same, crumbs, and chopped fennel.

Collared, as eel (page 468).

Potted.—Clean, season, and bake them in a pan with mixed spice, bay-leaves, and some butter; when cold lay them in a potting-pot, and cover with butter.

Pickled.—Boil them, then boil some of the liquor with a few peppercorns, bay-leaves, and a third part of the quantity of vinegar; when cold, pour it over them.

Another Method of Pickling.—Clean and divide them, then cut each side into three, or, leaving them undivided, cut each fish into five or six pieces; to six large mackerel take nearly an ounce of pepper, two nutmegs, a little mace, four cloves, and a handful of salt, all in the finest powder; mix, and making holes in each bit of fish, thrust the seasoning into them, and rub each piece with some of it; then fry them in brown oil; let them stand till cold, then put them into a stone jar, and cover with vinegar; if to keep long, pour oil on the top. Thus done, they may be preserved for months.

(*i*) Red Mullet.—Clean from the gills and small intestines, but leave the rest of the inside, fold in oiled paper, and gently bake in a small dish; make a sauce of the liquor that comes from the fish, with a piece of butter, a little flour, a little essence of anchovy, and a glass of sherry; give it a boil, and serve in a boat, and the fish in the paper cases.

(*j*) To Dress Pipers.—Boil or bake them with a pudding, well seasoned, like pike. If baked, put a large cup of rich broth into the dish, and when done, take that, some essence of anchovy, and a squeeze of lemon, and boil them up together for sauce.

(*k*) To Fry Smelts.—They should not be washed more than is necessary to clean them; dry them in a cloth, then lightly flour them, but shake it off; dip them into plenty of egg, then into bread-crumbs grated fine, and plunge them into a good pan of *boiling* lard; continue gently boiling, and a few minutes will make them a bright yellow-brown; take care not to take off the light roughness of the crumbs, or their beauty will be lost, and for this purpose use the wire frame (see *fig.* 132).

(*l*) Herrings and Sprats.—To Fry.—Do them of a light brown, with onions sliced, and serve them very hot.

To Broil.—Flour them first, and do of a good colour; plain butter for sauce.

To Pot.—Do them as for mackerel (which see).

To Cure as Bloaters.—Clean, and lay them in salt and a little saltpetre one night; then hang them on a stick, through the eyes, in a row; have ready an old cask, in which put some sawdust, and in the midst of it a heater red-hot; fix the stick over the smoke, and let them remain twenty-four hours.

To Dress Red Herrings.—Choose those that are large and moist, cut them open, pour some boiling small-beer over them, and let them soak half an hour; drain them dry, and make them just hot through before the fire, then rub some cold butter over them and serve. Egg-sauce, or buttered-eggs and mashed-potatoes should be sent up with them.

To Bake.—Wash and drain, without wiping them; season with allspice in fine powder, salt, and a few old cloves. Lay them in a pan with plenty of black pepper, an onion, and a few bay-leaves; add half vinegar and half small-beer, enough to cover them. Tie paper over the pan, and bake in a slow oven. If approved, throw saltpetre over them the night before, to make them look red. Gut through the vent, but do not open them.

(*m*) Fish Cakes or Balls Fried.—Mash a few potatoes in butter or cream; then take double the quantity of any dressed fish, after clearing off all bones and skin. Mix it well with the potatoes, season with pepper and salt, and mace, if approved, and make it into cakes or round balls, or put in scallop-shells. Fry them a light brown, and serve in a napkin; or, if in scallops, brown in a Dutch oven.

(*n*) To Warm up Fish the Second Day. Salmon may be put into boiling water, and just heated through, taking care to add vinegar as at first. Turbot, brill, and cod-fish are best picked from the bones, and warmed up with cream or white sauce; then mash some potatoes, and form a wall round a dish (which may or may not be egged and browned), in which the fish is to be placed and served.

1581. Special Directions for Dressing Shell Fish:—

(*a*) Lobsters, Crayfish, Prawns, and Shrimps.—To Boil.—Put them into a pot of boiling water; the lobsters must not remain any longer than fifteen or twenty minutes, unless very large indeed. From the shells and small claws bruised will be extracted a juice that will much improve the sauce. When cold, split the tail down the middle, and crack the claws, for which purpose, nothing serves so well as the chink at the hinge of a back-kitchen door. Place the body in the middle, half a tail on each side, and the large claws top and bottom.

To Roast.—After boiling the lobster, take it out of the shell, and while hot, rub it with butter, and lay it before the fire. Continue basting it with butter till it has a fine froth; then serve.

To Stew.—Pick the lobster, put the berries into a pan, in a warm bath, and rub them down with a bit of butter, two spoonfuls of any sort of gravy, one of soy, or walnut ketchup, a little salt and Cayenne, and a spoonful of port; stew the lobster cut into bits with the gravy as above.

To Pot.—Half boil them, pick out the meat, cut into small bits, season with mace, white pepper, nutmeg and salt, press close into a pot and cover with butter, bake half an hour; put the spawn in. When cold, take the lobster out, and put it into the pots with a little of the butter. Beat the other butter in a mortar with some of the spawn; then mix that coloured butter with as much as will be sufficient to cover the pots and strain it. Cayenne may be added, if approved.

Curry of Lobsters or Prawns.—Take them from the shells, and lay in a pan, with a small piece of mace, three or four spoonfuls of veal gravy, and four of cream; rub smooth one or two tea-spoonfuls of curry-powder, a tea-spoonful of flour, and an ounce of butter; simmer an hour; squeeze half a lemon in, and add salt.

To Pot Prawns and Shrimps.—They should be selected as large as possible. When boiled, take them out of the skins, and season them with salt, white pepper, and a very little mace and cloves. Press them into a pot, set it in the oven ten minutes, and when cold cover them with a layer of clarified butter.

(*b*) Crabs.—To Boil.—Proceed as for lobsters.

To Dress Hot.—After picking the meat out of the shell, season it with pepper and salt. Then wash the shell clean, and after making the white meat hot in a saucepan, lay it in the shell with the soft part at top; strew crumbs of bread, and brown it over.

To Dress Cold.—Empty the shells, and mix the flesh with oil, vinegar, salt, and a little white pepper and Cayenne; then put the mixture into the large shell, and serve; very little oil is necessary, and by some people it is altogether disliked.

(*c*) Oysters.—To Feed.—Put them into water, and wash them with a birch-besom till quite clean; then lay them round side downwards in a pan, sprinkle with flour or oatmeal and salt, and cover with water; do the same every day, and they will fatten. The water should be pretty salt, and rather more so than sea-water. Bay salt is the best for the purpose when it is at hand.

To Boil.—Open the shells, and clean and drain them into boiling water; then drop the oysters into a saucepan of boiling water, and boil them gently for three or four minutes. Serve in the shells, with a little cold butter, vinegar, and pepper.

To Stew.—Open and separate the liquor from them, then wash them from the grit; strain the liquor, and put with the oysters a bit of mace or lemon-peel, and a few white peppercorns. Simmer them very gently, and put some cream and a little flour and butter. Serve with sippets.

To Roast.—Place the oysters unopened between the bars of a fire or in a charcoal stove. They require about six or eight minutes' time.

To Scallop.—Put them with crumbs of bread, pepper, salt, nutmeg, and a bit of butter, into scallop-shells or saucers, and bake before the fire in a Dutch oven. Cream mixed with the bread is a great improvement.

To Fry.—Make a batter of flour, milk, and eggs, season it a very little with pepper and salt, dip the oysters into it, and fry them a fine yellow-brown. A little nutmeg should be put into the seasoning, and a few crumbs of bread into the flour.

As Loaves.—Open them, and save the liquor; wash them in it; then strain it through a sieve, and put a little of it into a tosser with a bit of butter and flour, white pepper, a scrape of nutmeg, and a little cream. Stew them, and cut in dice; put them into rolls sold for the purpose.

As Sausages.—Take a quarter of a pound of chicken or veal, three ounces of crumbs of bread, one ounce of beef-suet, thirty oysters, chopped, and half the yolk of an egg; to be seasoned with mace, Cayenne, and black pepper, and made either into balls, or of a long form, and fried. To be served with a rich brown gravy.

As Toast.—Pour some well-thickened and flavoured oyster sauce upon a buttered toast. The number of oysters is from two and a half to three-score, depending on the size of the corner-dish. This is very good for a top or bottom dish in a second course.

To Pickle.—Wash four dozen of the largest oysters you can get in their own liquor, wipe them dry, strain the liquor off, adding to it a dessert-spoonful of pepper, two blades of mace, a table-spoonful of salt, unless the liquor is already very salt, three of white wine, and four of vinegar.

1582. For Directions to Make Fish Patties, Pies, and Soups, see the chapters on those departments.

CHAP. VIII.

SOUP-MAKING SOUPS, AND BROTHS.

SECT. 1.—GENERAL REMARKS.

1583. UPON THE MANAGEMENT of this department depends, in great measure, the degree of economy or waste going on in any establishment. It will always happen, and especially in large families, that there are refuse bones and pieces of meat, which are left either in the dish or in the plates. Every scrap of these should be collected together, with any odds and ends of all kinds of animal food, such as heads and necks of poultry, trimmings of meat, &c. If these are not approved of for the house, they will, at all events, afford good useful soup for the poor, who will many of them be grateful for the broth or soup produced from them. Besides these, the boilings of all meat should be saved, and the strength increased by adding bones, scraps, &c. The liquor from salt-meat is too salt, and part only must be mixed with more boilings or water to form the foundation for all sorts of soups, gravies, &c.; the liquid thus furnished being on this account called by the name, "stock."

SECT. 2.—THE UTENSILS.

1584. These are—1st, *the digester*; and, 2nd, *the stock-pot.*

1585. THE DIGESTER, usually named after its inventor, Pepin (see *fig.* 129), is a strong iron vessel, with a moveable handle, by which it may be suspended over the fire. In the centre of the lid is a metal valve, which should always be attended to, as it might otherwise rust in its socket, and occasion the bursting of the pot. A little grease prevents this, but the greatest preventive is cleanliness. Besides this valve, which allows the steam to escape as soon as it rises with sufficient force to overcome the weight of the piece of metal, there is a peculiar adaptation of the lid, by which it is very securely closed. It is not only placed upon the top of the digester, but, by a twist, it is hooked under three projecting arms (see *fig.*), and is consequently kept down closely, its under surface being ground to correspond with the upper edge of the pot. When, therefore, the bones, &c., are placed in the digester with water, and the lid adapted to it properly, the heat is raised considerably above 212 degrees, because the pressure is greater than that of the atmosphere by the weight of the valve. The consequence is, that bones are compelled to give out their gelatine, and are left almost with nothing but their lime. This is the most economical of all cooking utensils, and is the means of saving an immense amount of nutritive matter; but it is of no use whatever, unless the lid is securely adapted to the pot.

1586. THE STOCK-POT (*fig.* 130) is merely a common saucepan, with a well-fixed lid. It is intended for the slow boiling of meat in the liquor which has come out of the digester from the bones. Some people use the digester as a stock-pot, but it is better to put the bones in by themselves with any pieces of gristle, as much more gelatine is dissolved by water than by a strong soup made from meat; besides which, the increased temperature in the digester is unfavourable to the solution of the meat. At all events, the bones should be first boiled, and the meat added afterwards; but the better plan is to boil the bones first, and extract everything from them; then pour off into the stock-pot, and add what meat or other soft bits may be intended to be used, stewing them for some hours very slowly. Most soups will require from four to six hours' gentle boiling, and almost all should be prepared the day before they are to be used, by which plan they may be allowed to become cold, when the fat collected on the top, and become solid, may easily be separated.

SECT. 3.—SOUP-MAKING.

1587. In making the various sorts of soups, three different kinds of gelatinous solutions are alluded to—1st, *boilings*, which mean the water in which meat has been boiled; 2nd, *brown stock*, which is soup made from beef, and cow-heels, or knuckle of veal, with or without the addition of any boilings; and 3rd, *white stock*, which is made from veal, or any white meat, as chickens, turkey boilings, &c.;—besides these are mentioned, *browning* and *glaze*, which will be presently described.

(*a*) TO MAKE GOOD STOCK.—Put whatever bones are at hand in the digester (previously breaking them in pieces); boil them for three or four hours at least, then pour off the liquor into the stock-pot, and add to each gallon the meat off a knuckle of veal, a pound of lean beef, and a pound of the lean of a gammon of bacon, all sliced, with two or three scraped carrots, two onions, two turnips, two heads of celery sliced, and two quarts of water. Stew the meat quite tender, but do not let it burn. When thus prepared it will serve either for soup, or brown or white gravy. If for BROWN GRAVY, put some of the following colouring, and boil a few minutes.

(*b*) BROWNING FOR SOUPS AND GRAVIES.—Put four ounces of lump sugar, a gill of water, and half an ounce of the finest butter into a small tosser, and set it over a gentle fire. Stir it with a wooden spoon till of a bright brown; then add half a pint of water; boil, skim, and when cold bottle and cork it close. Add to soup or gravy as much of this as will give a proper colour.

Another.—Put four ounces of pounded loaf sugar into a fryingpan, with one ounce of butter; set it over a clear fire and stir it, when it is frothy, and the sugar is dissolving, hold it higher till it becomes a deep brown, pour in by degrees a third of a pint of port-wine, add a little lemon peel, salt, three spoonfuls of mushroom ketchup, a little mace, six cloves, an onion, and some allspice, boil all slowly for ten minutes, skim it, pour it into a basin, and when cold bottle for use.

(*c*) TO MAKE STOCK FOR BROWN OR WHITE FISH SOUPS.—Take a pound of skate, four or five flounders, and two pounds of eels; clean them well, and cut them into pieces; cover them with water, and season them with mace, pepper, salt, an onion stuck with cloves, a head of celery, two parsley roots sliced, and a bunch of sweet herbs. Simmer an hour and a half closely covered, and then strain it off for use. If for brown soup, first fry the fish brown in butter, and then do as above. It will not keep more than two or three days.

(*d*) GLAZE is a boiled-down animal jelly, made from the stock as above; but avoiding the use of salt, as when boiled down sufficiently it would be too strong of that saline material. It only requires care not to burn it, and should be properly strained. A quart of stock will only make about a spoonful of glaze; and as it consists almost entirely of gelatine, the portable soups sold in the shops answer all the purpose, at much less trouble and cost; indeed glaze itself may be bought there cheaper than it can be made at home.

(*e*) TO CLARIFY STOCK, which process is now often wanted, as it is the fashion to use it clear in mock-turtle and many other soups, which were formerly thickened, the following method must be adopted:—Put the stock over a good fire, and when boiling add the white of one egg to each quart of stock, proceeding as follows: beat the eggs up well in a little water, then add a little hot stock, beat to a froth, and pour gradually into the pot, when the whole is to be whisked. Boil up, and immediately remove and strain through a fine sieve or cloth.

1586. RECEIPTS FOR SOUPS:—

(*a*) MUTTON BROTH WITH THE MEAT IN.—Cut a neck of mutton into chops, taking off *every bit* of fat four hours before dinner; put it in the stewpan, and pour it nearly full of boiling water; cut in slices four carrots and six small turnips, and put in the pan at the same time; let it simmer and boil till dinner-time; flavour with salt, and skim off the fat. Some people add an ounce or two of rice with the vegetables.

(*b*) TO MAKE MUTTON OR VEAL BROTH.—Take one pound of meat, free from the bone, and well washed in boiling water, then dry it in a cloth, and put it on the fire with a quart of water; when it boils skim it as clear as possible, then add a little more cold water, which will make the scum rise afresh; then take it off, and season with parsley root about the size of two fingers, a small carrot, an onion or two, a blade of mace (and about two ounces of clean bacon if you like this addition); boil it an hour and a half at least, till the meat is tender; then strain it. It may be made with mutton, beef, or veal, or the three combined.

(*c*) TO MAKE GRAVY SOUP.—Fry three or four pounds of meat, then fry half a dozen carrots and turnips, after which fry three or four onions, taking care not to let them burn; stew all together with a little pepper, salt, a clove or two, and a stick of celery; strain it; when cold skim off the fat, and boil it up again with the white of three or four eggs to clear it; strain it through a cloth; it is then fit for use. Soak half a rasped roll in a little gravy, and stick it with almonds, to put in the soup when in the tureen; or, as is generally preferred, add some vermicelli, or macaroni made in small shapes for the purpose, or the piped macaroni cut in short lengths. (It forms a pleasing variety to add, instead of the above, some pieces of carrot cut long and thin, or in their season a few heads of asparagus cut in short lengths and made tender, but not to break, which make it like Julienne soup).

(*d*) MEAT SOUP FOR FAMILY USE OR FOR VILLAGE DISTRIBUTION.—To make 120 quarts, use fifteen to twenty pounds of beef, half a bushel of turnips, a quarter of a peck of carrots, a quarter of a peck of onions, one peck of peas (or instead of peas, three pounds of rice), one large spoonful of bruised celery-seed, three-quarters of a peck of flour, or rather more; one ounce and a quarter of pepper, and the third of a peck of salt. The bones should be broken in pieces and separately boiled in a digester, in half the water, and the liquor added to the remainder in which the meat and vegetables are boiled.

(*e*) VEAL BROTH.—Stew a small knuckle in about three quarts of water, with two ounces of well-washed rice, or, what is still better, the same quantity of sago, a little salt, and a blade of mace, till the liquor is half wasted away.

(*f*) OX-TAIL SOUP.—Boil an ox-tail,

divided at the joints, slowly in a pint of water, with a small lump of butter or good beef dripping, for three hours, till the water is reduced one-half; then add half a carrot and turnip, an onion, and a small head of celery, a little lemon, and common thyme and parsley. Five or six peppercorns and a pinch of Cayenne should be added, and also a tea-spoonful of salt. When the vegetables are quite tender, take them out and pulp them through a coarse sieve, after which mix with them two table-spoonfuls of flour, and rub all up with the gravy in the stewpan; then add three pints of boiling water, stirring it in. Finally boil up for a few minutes, and add a little browning, or good brown gravy. It may be made clear by omitting the flour.

(*g*) Ox-cheek Soup is merely the stewed ox-cheek (see *q*, page 460), with the soup somewhat reduced, and if approved of, thickened like the ox-tail soup.

(*h*) The Celebrated French Pot-au-Feu, according to the recognised authority of M. Soyer, consists of six pounds of beef, four quarts of water, set near the fire and skimmed; when nearly boiling, add a spoonful and a half of salt, half a pound of liver, two carrots, four turnips, eight young or two old leeks, one head of celery, two onions (one of them burnt), with a clove in each, and a piece of parsnip. Skim again, and simmer four or five hours, adding a little cold water now and then; take off part of the fat, put slices of bread into the tureen, lay half the vegetables over, and half the broth, and serve the meat (*bouilli*) separately with the other half of the vegetables.

(*i*) French Soup (*very good and cheap*). A sheep's head and pluck boiled gently in a gallon of water till reduced to half the quantity, a small teacupful of pearl-barley, six large onions, one turnip, one carrot, a bunch of sweet herbs, and a few cloves and peppercorns. Add a little mushroom ketchup, and thicken with some flour rolled in a lump of butter. It is better to boil it the day before it is wanted. Cut the meat off the head in slices as for hashed calf's head (taking it out for this purpose as soon as it is sufficiently tender), and then into small squares, which must be put into the soup again when it is warmed up for use. Finish it up with forcemeat and little egg-balls, and a teacupful of white wine, which, with the addition of a *little* sugar, makes it nearly equal to mock-turtle.

(*j*) Mulligatawny Soup.—Take a knuckle of veal, five pounds weight, put it on with enough water to cover it. When it is about half done take it off, cut the meat in slices, put it in a cool place till the next day, then take the fat off and fry the veal in a little butter, and put it in the soup with four dessert-spoonfuls of curry-powder, a little salt, and four onions sliced and fried in butter. Let all simmer together for two hours; if too thin, thicken it with flour and butter. Serve it up with rice in another dish.

Another.—Take four pounds of beef, one and a half of scrag of mutton, two of ham, and a knuckle of veal; cut in small pieces, and put in a gallon of water; reduce to two quarts; add two onions, four turnips, and plenty of carrots. Strain it off, let it cool, take off the fat, and warm it up with two or three sticks of celery, and rub it through a sieve; put it back in the saucepan, and add walnut or mushroom ketchup, a table-spoonful of curry-powder, a little Cayenne pepper, and the juice of a lemon. Prepare rice as for curry to hand round with it.

(*k*) Mock-Turtle Soup.—Halve a calf's head, take out the brains, and put as much water as you wish to make soup, with sweet herbs, parsley, a few onions, and some lemon peel. Stew it gently until the meat is tender; then take it out and let it get cold; thicken the soup with a little flour and butter, and strain it through a sieve. Add sherry wine, a little walnut and mushroom ketchup, pounded mace, and Cayenne. Take the brains and beat them up with a little flour and two eggs into a light batter, adding pepper and salt, and some parsley chopped very fine; then take the yolks of two eggs and beat them up; make them into as many portions as you please, tying each in a bit of muslin, and boil them in little round balls; the batter made with the brains is to be fried into cakes a light brown. When the head is cold it must be cut into small pieces and laid in the gravy, the cakes and eggs, with some forcemeat balls, to be laid on the top of the soup just before it is sent to table. Every particle of fat must be removed from the surface before warming the soup for the table.

Another Receipt.—Cut one neat's foot and two calf's feet in thin slices; if you like ox palates, six will do, and in that case only one calf's foot will be required. Boil these till tender enough for a fricassee. Put them into a full quart of good mutton-gravy, entirely free from fat; cover it down close, and let it stew gently rather more than three-quarters of an hour with the following—one large onion, one dozen of bearded oysters and their liquor, and some lemon peel, a large bunch of sweet-herbs, a good-sized anchovy, some salt, nutmeg, and Cayenne. The onion, oysters, herbs, anchovy, and lemon peel must be chopped very fine, and half a pint of Madeira or sherry wine added just before it is sent to table; squeeze in half a lemon, and put in egg and forcemeat-balls, if approved of, the balls being well-seasoned. About three-quarters of a pound of scrag of mutton will make the gravy.

(*l*) Mock-turtle Soup (*Clear*).—Either of the above receipts may be made clear by thickening them with arrowroot instead of flour, and clarifying them (see page 474). When this mode is preferred, the soup is served without forcemeat or egg-balls.

(*m*) To Make Hare Soup.—Cut a hare in small pieces, season every piece with pepper and salt, and put into a jug holding three quarts; fill it with water; add two or three onions and a bunch of sweet herbs; tie a paper over it, and let it stand in an oven or in a pan of boiling water for two or three hours; then remove the bunch of herbs, and serve the soup with the meat in it.

(*n*) Partridge or Grouse Soup.—Take a knuckle of veal, a piece of lean ham, three good-sized carrots, three large onions, two blades of mace, some white peppercorns, and five quarts of water, and make a good stock; then add four partridges or three grouse, stew till they are quite tender, take the best parts off, beat them fine, and rub them through a sieve with a little of the stock; stew the bones, &c., in the stock, strain, and add the whole to the pounded meat; when served, season, put some good cream, a spoonful of sugar, and one or two glasses of port-wine.

(*o*) Giblet Soup.—Scald and clean three or four sets of goose or duck-giblets; set them to stew, with a pound or two of gravy-beef, scrag of mutton, or the bone of a knuckle of veal, an ox-tail, or some shanks of mutton, with three onions, a large bunch of sweet herbs, a tea-spoonful of white pepper, and a large spoonful of salt. Put five pints of water, and simmer till the gizzards (which must be each in four pieces) are quite tender; skim nicely, and add a quarter of a pint of cream, two teaspoonfuls of mushroom-powder, and an ounce of butter mixed with a dessert-spoonful of flour. Let it boil a few minutes, and serve with the giblets. It may be seasoned, instead of cream, with two glasses of sherry or Madeira, a large spoonful of ketchup, and some Cayenne. When in the tureen, add salt to the taste.

(*p*) Crayfish Soup.—Take fifty crayfish, pull out the tails, and then pound the rest in a mortar with the shells and spawn. Have ready the meat and spawn of a lobster, two quarts of good veal and ham broth, and put the pounded crayfish into it, with the crumbs of two French rolls, and half a pint of good cream. Let it have one boil, and then press it through a sieve. Put in the tails of the crayfish, and serve with the crust of French rolls.

(*q*) Lobster Soup.—Take the meat from the claws, bodies, and tails of six small lobsters; take away the brown fur, and the bag in the head; beat the fins, chine, and small claws in a mortar. Boil very gently in two quarts of water, with the crumb of a French roll, some white pepper, salt, two anchovies, a large onion, sweet herbs, and a bit of lemon-peel, till you have extracted the goodness of them all. Strain it off. Beat the spawn in a mortar, with a bit of butter, a quarter of a nutmeg, and a tea-spoonful of flour; mix it with a quart of cream. Cut the tails into pieces, and give them a boil up with the cream and soup. Serve with forcemeat-balls made of the remainder of the lobsters, mace, pepper, salt, a few crumbs, and an egg or two. Let the balls be made up with a bit of flour, and heated in the soup.

(*r*) Oyster Soup.—Take two quarts of fish-stock, as directed in page 474; beat the yolks of ten hard eggs and the solid part of two quarts of oysters in a mortar, and add this to the stock. Simmer it all for half an hour; then strain it off, and put it and the oysters (cleared of the beards, and nicely washed) into the soup. Simmer five minutes; have ready the yolks of six raw eggs, well beaten, and add them to the soup. Stir it all well one way on the side of the fire till it is thick and smooth, but do not let it boil. Serve altogether.

(*s*) Eel Soup.—Take three pounds of small eels; put to them two quarts of water, a crust of bread, three blades of mace, some whole pepper, an onion, and a bunch of sweet herbs; cover them close, and stew till the fish is quite broken, then strain it off. Toast some bread, cut it into dice, and pour the soup on it boiling. A piece of carrot may be put in it at first. This soup will be as rich as if made of meat. A quarter of a pint of rich cream, with a teaspoonful of flour rubbed smooth in it, is a great improvement.

(*t*) Carrot Soup (Without Meat).—Take four or five large carrots, one turnip, three onions, and three heads of celery shred fine; put into a stew-pan with a quarter of a pound of butter, three cloves, some peppercorns, and a blade of mace; stir till it is a pulp; add half a pint of peas boiled to a pulp, two anchovies, and three quarts of water; let it simmer two hours, and rub through a hair-sieve. If not thick enough, add a little flour and butter.

Another.—Slice two good-sized carrots, two large onions, one large turnip, and one stick of celery; dredge flour over them and fry till tender, with just butter enough to keep them from burning; put them in a stewpan, and pour enough boiling water to cover them. Stew them about four hours, and when half done add boiling water to make the proper thickness. Mash and strain through a sieve, and season with pepper and salt. If approved of, add a little cream.

CARROT SOUP (WITH MEAT).—Put some beef bones with four quarts of the liquor in which a leg of mutton or beef has been boiled, two large onions, a turnip, pepper, and salt, into a saucepan, and stew for three hours. Have ready six large carrots, scraped and cut thin, strain the soup on them, and stew till soft enough to pulp through a hair-sieve or coarse cloth, then boil the pulp with the soup, which is to be as thick as pea-soup. Use two wooden spoons to rub the carrots through the sieve, and pulp only the red part of the carrot, not the yellow. Make the soup the day before, and add Cayenne to the palate.

CARROT SOUP (WITH CREAM).—To the liquor that a knuckle of veal has been boiled in, add twelve large carrots, boil till the carrots will mash through a sieve, put them through, and then let them boil in the broth till quite smooth; add half a pint of cream and a little salt. It should be boiled till smooth and of the consistence of pea-soup. *Or*, the stock may be made of one pound and a half of scrag of mutton stewed in three quarts of water.

(*u*) GREEN-PEA SOUP.—Take the insides of six cos-lettuces and three cucumbers, pare and slice them, and cut the lettuces in pieces, add half a pint of young peas, an onion both top and bottom, and a very little parsley; put them into a stewpan, with half a pound of butter and a little salt and black pepper; cover them close, and stew gently two hours; shake the pan frequently, but do not open the lid; boil some younger peas till tender, rub them through a colander, and add the pulp to the stew; the next day add another half-pint of young peas, and as much of the pea-water as will reduce the soup to the thickness you wish to have it. By way of variety, all the vegetables may be rubbed through the colander, and it will make a nice smooth soup.

Another Green-pea Soup.—To a gallon of water take half a peck of large green peas and a French roll; let them boil till the peas are broken; strain them through a colander, put to them some whole pepper and mace, half a peck of young peas, and let them boil; take a handful of spinach, two or three cabbage-lettuces, a few green onions, cut them in pieces not too small, put them in a stewpan with half or a quarter of a pound of butter; let them stew till very tender; when the peas are enough boiled put in a few marigold leaves, and let them boil together; cut a quantity of bread in little squares, and fry them very dry to eat with the soup.

(*v*) ASPARAGUS SOUP.—Make rather a weak stock, and boil with it some fresh mint, a stick of celery, a turnip, carrot, and one onion; boil it about three hours; strain it, and boil with it a handful of mint till it is flavoured; take two bunches of asparagus, and cut all the tender part, about the size of peas, into cold water; take these out, and boil in half a pint of cold water till tender; pour them into the stock, and thicken with flour and butter; add salt and a handful of mint chopped very fine when it is nearly thickened, and at the same time put in half a teacupful of spinach-juice (made by tying spinach leaves in a muslin after they have been washed, and pounding them, then squeezing the juice); pea-leaf would do better if it could be had.

(*w*) JULIENNE SOUP.—Take some carrots, turnips, a few heads of celery, and a very few leeks and onions, cut them in fillets an inch long, and the size of a wooden skewer, then take two ounces of butter and lay it at the bottom of the stewpan, with the roots over; fry them over a slow fire, stirring gently; moisten them with veal broth or a quart of water; let them boil on the corner of a stove; skim all the fat off, and add a quart or two of clear soup. In summer add green peas, asparagus-tops, French-beans, some lettuce or sorrel.

(*x*) TURNIP SOUP.—Take off a knuckle of veal all the meat that can be made into cutlets, &c., and set the remainder on to stew with an onion, a bunch of herbs, a blade of mace, and five pints of water; cover it close, and let it stew on a slow fire four or five hours. Strain and set it up till next day, then take the fat and sediment from it, and simmer it with turnips cut into small dice till tender, seasoning it with salt and pepper. Before serving, rub down half a spoonful of flour, with half a pint of good cream, and the size of a walnut of butter. Let a small roll simmer in the soup till soaked through, and serve this with it. It should be as thick as middling cream.

(*y*) PEA-SOUP (*Old*).—Save the water of boiled pork or beef; and if too salt, put as much fresh water to it, or use fresh water entirely with roast beef bones, a ham or gammon bone, and an anchovy or two. Simmer these with some good whole or split peas; the smaller the quantity of water at first, the better. Simmer till the peas will pulp through a colander; then pulp them, and boil the pulp in the liquor that boiled the peas, with two carrots, a turnip, a leek, and a stick of celery cut into bits, or use the tincture of celery (page 409), or celery seed; stew till all are quite tender, then season with pepper and salt; strain, and serve with bread toasted, and cut in dice, or fried in the same shape. Dried mint is to be finely powdered and served with it.

Pea-soup (Without Meat).—Boil one pint of split peas, four or five hours, till quite tender, in two quarts of water. Add two large carrots and two turnips, a stick of celery, and some potatoes cut all in pieces, and boiled till they will pulp through a sieve. Cut one *large* onion in slices and fry it in flour and butter, with pepper and salt enough for the whole soup. Add this to the above with a little soy and ketchup, and it will scarcely be distinguished from the soup made with meat.

(*z*) **Soup Maigre.**—Melt half a pound of butter into a stewpan, shake it round, and throw in six middling onions sliced. Shake the pan well for two or three minutes, then put to it five heads of celery, two handfuls of spinach, two cabbage lettuces cut small, and some parsley. Shake the pan well for ten minutes, then put in two quarts of water, some crusts of bread, a tea-spoonful of beaten pepper, three or four blades of mace, and if you have any white beet leaves add a large handful of them cut small. Boil gently an hour. Just before serving, beat in two yolks of eggs and a large spoonful of vinegar

Another Soup Maigre.—Cut two onions into very small slices, and put them into a stewpan with two ounces of butter, fry them a little, taking care not to discolour them. Have ready three or four handfuls of sorrel well washed and cut into ribbons, and add them to the onions, with a table-spoonful of flour, then mix well, adding one pint of milk and one quart of water; boil altogether for two minutes, keeping it well stirred; then take it off the fire, and stir in quickly the yolks of two eggs, mixed with half a pint of cream. Do not boil it after the eggs are in.

Another.—Flour and fry a quart of green peas, four onions sliced, the coarse stalks of celery, a carrot, a turnip, and a parsnip, then pour on them three quarts of water. Let it simmer till the whole will pulp through a sieve, then boil in it the best of the celery cut thin.

(*a a*) **Spinach Soup.**—Shred two handfuls of spinach, a turnip, two onions, one head of celery, two carrots, and a little thyme and parsley. Put all into a stew-pot, with a bit of butter the size of a walnut, and a pint of broth, or the water in which meat has been boiled; stew till the vegetables are quite tender; work them through a coarse cloth or sieve with a spoon, then to the pulp of the vegetables and liquor put a quart of fresh water, pepper and salt, and boil altogether. Have ready some suet dumplings the size of a walnut, and before pouring the soup into the tureen, put them into it. The suet must not be shred too fine, and take care that it is quite fresh.

(*bb*) **Rice Soup.**—Boil about two teacupfuls of rice in a quart of water, with two onions and two sticks of celery, till the rice is quite soft. Put one or two ounces of butter and about two table-spoonfuls of flour into a stewpan, and when melted, add the above with some stock (which is best made of some veal bones or boilings), and stir till of a proper thickness. Flavour with a little salt and pepper, and just before serving, add a tea-spoonful of cream.

(*cc*) **Onion Soup.**—Take about two pounds of mutton or veal, put it on to stew with twelve large onions, sliced. When the onions are very soft, put them through a fine sieve, or put a cloth into the colander, and mash the onions in it, pouring the gravy over them till they are nearly all run through. This quantity will make three pints of soup; add one pint of new milk, with two table-spoonfuls of flour mixed with it, one table-spoonful of essence of anchovy; mace, pepper, and salt to the taste.

(*dd*) **White Soup.**—Take the bony part of a knuckle of veal, break the bones quite small, cover it close down in a pan, with a little mace, a few black, and a few white peppercorns, just broken, a little turnip, carrot, onion, and celery; put in a quart of water, and let it simmer gently for three hours. Stir them together, and put in as much water as will make the quantity; put it through a sieve. When wanted to be used, put it into a pan with half a pint of good cream, and thicken with flour and butter. Boil a roll in the soup till quite soft, just before taking it up; have the roll rubbed through a sieve with a little of the soup, and just give it a boil in the soup, to add to the thickness of it. If a French roll cannot be got, cut the crust from a common one, or it will discolour the whole.

Another.—Take a shoulder or knuckle of veal, a piece of lean ham, a few cloves, a little mace, and an onion; boil them to a strong gravy; during the time put in a small bunch of pot-herbs for ten minutes; strain it and let it get cold; boil a pint of good cream, and pour it upon the crumb of a penny loaf; let it stand some time and strain; blanch one ounce of sweet almonds, and beat them in a mortar with the yolks of four eggs boiled hard; mix them well together, and add them to the gravy; stir all over a slow fire, taking care it does not boil. Two ounces of vermicelli is a great improvement.

(*ee*) **A White Soup of Jerusalem Arti-**

CHOKES.—The stock of veal, to which add three pounds of artichokes, to be pulped through a sieve; season with salt, and a small quantity of Cayenne pepper, and before it is poured into the tureen stir in some good thick cream; it must on no account be permitted to *boil* after the cream has been added, but care must be taken that it is not chilled by it.

(*ff*) TO MAKE SOUP FOR SUPPER.—Take a quart of good new milk, and add a pint of cream, a bit of lemon-peel, a laurel-leaf or two, a stick of cinnamon, a few coriander-seeds, and a small piece of sugar; boil a few minutes, and set it to cool; then beat the yolks of ten eggs, and blanch and pound two ounces of sweet almonds and two or three bitter almonds with a little water in a mortar till very fine; then put them with the cream; mix the eggs smoothly with it in the stewpan, having previously run the mixture through a coarse sieve; stir it over a gentle fire till it begins to thicken like a custard; then pour it into the tureen with some slices of French roll as thick as biscuits.

(*gg*) JENNY LIND'S SOUP.—Make three quarts of stock, which strain through a fine sieve into a stewpan; add to it three ounces of sago, and let it boil gently for twenty minutes, then skim it. The stock being previously seasoned, will only require half a tea-spoonful of sugar, a little salt, pepper, and nutmeg; a little thyme, parsley, and a bay leaf will vary the flavour. Just before serving, put into a basin the well-beaten yolks of four eggs, and add to them half a pint of cream; then take the stewpan off the fire, pour it in, stir quickly for one minute, and serve immediately. If it boil again it will be spoiled.

(*hh*) VEGETABLE SOUP.—Put into two quarts of cold water two pounds of Jerusalem artichokes pared and halved, one pound of turnips pared and sliced, two or three onions, and a stick of celery. Boil altogether slowly for two and a half hours, with a stock made of veal or rabbits; then add two table-spoonfuls of flour, one ounce of butter, and pepper and salt to the taste. Let it simmer half an hour longer, skimming it carefully, then serve.

(*ii*) PLAIN VEGETABLE SOUP.—Take *all kinds of* vegetables, slice them thin, put them into a stewpan with a lump of butter, and stew them until quite tender; then add any stock there happens to be in the house; thicken it with either flour or bread crumbs: flavour it with pepper and salt, and serve.

CHAP. IX.

GRAVIES, SAVOURY SAUCES, FORCEMEATS, AND SAUSAGES.

SECT. 1.—GENERAL REMARKS.

1589. GRAVIES, SAUCES, AND STUFFINGS, are savoury compounds intended to give flavour and zest to the more insipid and solid joints, such as roast veal or poultry. The sauces here described differ from the permanent sauces given with vinegar pickles, at page 408, inasmuch as though they are, by good housekeepers, always kept in the house, yet it is only for a short time, and the great art consists in using them up before they become spoiled. Thus, the proper course in these matters is so to arrange the principal and side dishes for to-morrow, that they shall use up the sauces concocted to-day, or yesterday, or perhaps even the day before that.

SECT. 2.—GRAVIES AND SAVOURY JELLIES.

1590. Gravies are distinguished from sauces, in their predominating element being the osmazome of meat, commonly called gravy, however it may be disguised. Gravy may be made quite as good of the skirts, or any other coarse part, of beef, and even from the liver or the kidney, as of any other meat prepared in the same way; so also it may be procured from the shank-end of legs of mutton that have been dressed, if much is not wanted. The raw shank-bones of mutton are a great improvement to the richness of gravy; but first it is necessary to soak them well, and scour them clean. Sheep's heads also make excellent gravy.

1591. BROWNING FOR GRAVY is pretty nearly the same as for soup (see page 473); but the following is, perhaps, still better adapted for the purpose:—

Put two ounces of moist sugar into an iron saucepan and boil till brown, then add half a pint of water, some pepper, salt, and mace, and about half a tea-spoonful of the gravy settled at the bottom of the dripping-pot. Boil for two or three minutes, till it is of a good brown, and bottle it. Put half a teacupful of hot water, with a teaspoonful of browning dissolved in it, into the dish with the meat, and put a teaspoonful into the hashes.

1592. **Glaze for Gravy** is also pretty nearly the same as for soups (see page 474), or as follows:—

Break the bones of several joints of cooked meat as small as possible, put them to boil in two quarts of water for two hours; then strain the bones out and boil about an hour, till reduced to rather more than a teacupful; flavour it with black pepper and salt, and add a little browning par. 1591). It should be dried in saucers till of the consistence nearly of India-rubber, and will in this state keep for three months or more.

To Preserve Beef Liver For Gravy.—Take a clear liver, and rub it well all over with four ounces of coarse sugar, or treacle; let it lie twenty-four hours, then rub it well all over with two ounces of saltpetre, four ounces of bay-salt, and one ounce of common salt. Let it lie in the pickle for three weeks, turning and rubbing it every day. Hang it near the fire to dry, and when used cut slices off and boil them in as much water as is required for the gravy. Add herbs, or an onion, if approved.

1593. **The Following Receipts** are for the different gravies in constant use.

(*a*) **Plain Joint Gravy** is described under the head of Roasting, at page 450.

(*b*) **Made-gravy** fit for ordinary purposes, such as roast poultry or game, as served in every-day dinners, may be made so that it will keep a week in moderately cool weather as follows:—Cut lean beef thin, put it into a fryingpan without any butter, and set it on a fire covered, but take care it does not burn; let it stay till all the gravy that comes out of the meat is dried up into it again; put as much water as will cover the meat, and let that stew away. Then put to the meat a small quantity of water, herbs, onions, spice, and a bit of lean ham; simmer till it is rich, and keep it in a cool place. Do not take off the fat till going to be used.

Another.—Take any bones or meat in the house, and put in a stewpan with onions, parsley, and sweet-herbs. Let it stew well, and thicken it with flour and butter, mixed up; then pass it through a sieve, and add soy, ketchup, Reading or Worcestershire sauce, port-wine, a little pounded mace, and Cayenne, to the taste, with a little browning to colour it if necessary. Put it in a basin, and when cold, melt some suet and pour over it to preserve it.

(*c*) **Cullis or Brown Gravy.**—Lay over the bottom of a stewpan as much lean veal as will cover it an inch thick; then cover the veal with thin slices of undressed gammon, two or three onions, two or three bay-leaves, some sweet-herbs, two blades of mace, and three cloves; cover the stewpan, and set it over a slow fire, but when the juices come out let the fire be a little quicker; when the meat is of a fine brown fill the pan with good beef-broth, boil and skim it, then simmer an hour, and add a little water mixed with as much flour as will make it properly thick; boil it half an hour, and strain it. This will keep for a week.

(*d*) **Veal Gravy** is made as directed under (*c*), but without the spice, herbs, and flour.

(*e*) **Clear Gravy.**—Slice beef thin; broil a part of it over a very clear quick fire, just enough to give colour to the gravy, but not to dress it; put that and the raw part into a very nicely tinned stewpan, with two onions, a clove or two, whole black peppers, berries of allspice, and a bunch of sweet-herbs; cover it with hot water, give it one boil, and skim it well two or three times; then cover it, and simmer till quite strong.

(*f*) **A Rich Gravy.**—Cut the beef into thin slices, according to the quantity wanted; slice onions thin, and flour both; fry them of a light pale-brown, but do not on any account suffer them to get black; put them into a stewpan, pour boiling water on the browning in the fryingpan, boil it up, and pour on the meat; put to it a bunch of parsley, thyme, and savory, a small bit of knotted marjoram, the same of tarragon, some mace, berries of allspice, whole black peppers, a clove or two, and a bit of ham or gammon of bacon; simmer till you have extracted all the juices of the meat, and be sure to skim the moment it boils, and often after; if for a hare or stewed fish, anchovy should be added.

(*g*) **Economical Gravy for Poultry.**—Wash the feet nicely, and cut them and the neck small; simmer them with a little bread browned, a slice of onion, a bit of parsley and thyme, some pepper and salt, and the liver and gizzard, in a quarter of a pint of water, till half-wasted; take out the liver, bruise it, and strain the liquor to it; then thicken it with flour and butter, and add a tea-spoonful of mushroom ketchup, and it will be very good.

(*h*) **Ham or Gravy Sauce.**—When a ham is almost done with, pick all the meat clean from the bone, leaving out any rusty part; beat the meat and the bone to a mash with a chopper and rolling-pin; put it in a saucepan, with three spoonfuls of gravy; set it over a slow fire, and stir it all the time, or it will stick to the bottom. When it has been on some time, put to it a small bundle of sweet-herbs, some pepper, and half a pint of beef-gravy; cover it up, and let it stew over a gentle fire. When it has a good flavour of the herbs, strain off the gravy. A little of this is an improvement to all gravies.

(i) Gravy for Wild-fowl.—To one wine-glassful of port wine add a table-spoonful each of walnut ketchup, mushroom ketchup, and lemon-juice, one shalot sliced (or a little of the essence), a small piece of lemon-peel, and a blade of mace. These should all be scalded, strained, and added to the mere gravy that comes from the fowl in roasting. The breast of the fowl should be scored in three or four places, and the gravy poured *boiling hot over it* before it is sent to table.

(j) Imitation Brown Gravy (Without Meat).—Take of water and ale that is not too bitter one pint of each; of walnut pickle, mushroom pickle, and ketchup, two table-spoonfuls of each; two anchovies, two onions sliced, some salt, two or three blades of mace, and some whole pepper. To the above ingredients add a little butter, with a small portion of flour, having previously made it brown by stirring it till the froth sinks. Boil the whole together for twenty minutes.

(k) Wine Gravy or Sauce.—Make a strong rich gravy by either of the receipts given at (b) or (c). The second of those given under (b) is the best for the purpose. Take about one-third of a sauce tureen of this, heat it, and when ready for use add from two to three table-spoonfuls of rich and new port-wine.

(l) Sweet Sauce for Savoury Joints, is served with mutton and venison, and often with hare also. It is made by dissolving two or three table-spoonfuls of red currant jelly in a small enamelled saucepan, and when hot adding one or two table-spoonfuls of port-wine.

(m) Strong Fish Gravy.—Skin two or three eels or some flounders; gut and wash them very clean; cut them into small pieces, and put into a saucepan. Cover them with water, and add a little crust of bread toasted brown, two blades of mace, some whole pepper, sweet herbs, a piece of lemon-peel, an anchovy or two and a teaspoonful of horseradish. Cover close, and simmer; add a bit of butter and flour, and boil with the above.

(n) Savoury Jelly, to put over Cold Pies.—Make it of a small bare knuckle of leg or shoulder of veal, or a piece of scrag of that or mutton; or, if the pie be of fowl or rabbit, the carcasses, necks, and heads added to any piece of meat will be sufficient, observing to give consistence by cow-heel or shanks of mutton. Put the meat, a slice of lean ham or bacon, a fagot of different herbs, two blades of mace, an onion or two, a small bit of lemon-peel, and a teaspoonful of Jamaica pepper bruised, and the same of whole pepper, and three pints of water, in a stewpot that shuts very close. As soon as it boils, skim it well, and let it simmer very slowly till quite strong; strain it, and when cold take off the fat with a spoon first, and then, to remove every particle of grease, lay a clean piece of cap or blotting paper on it. When cold, if not clear, warm it, and after letting it stand for a few minutes, pour the clearer part off the sediment, and then boil the former for a few minutes with the whites of two eggs, after which it must be strained through a fine cloth in a strainer, and put by to cool, then it must be skimmed.

(o) Jelly to Cover Cold Fish.—Clean a small skate and put it into three quarts of water, with a calf's foot or cow-heel, a stick of horseradish, an onion, three blades of mace, some white pepper, a piece of lemon-peel, and a good slice of lean gammon; stew till it becomes jelly; strain it off, and when cold remove every bit of fat; take it up from the sediment and boil it, omitting the fat, with a glass of sherry, the whites of four or five eggs, and a piece of lemon; boil without stirring, and after a few minutes set it by to stand half an hour, and strain it through a bag or sieve with a cloth in it; cover the fish with it when cold.

Sect. 3.—Sauces.

1594. These are distinguished from gravies by their foundation being composed of gelatine, milk, cream, butter, or some other mild material, variously flavoured.

1595. Receipts for Savoury Sauces:—

(a) White Sauce for Fricassee of Fowls, Rabbits, White Meat, Fish, or Vegetables.—It is seldom necessary to buy meat for this favourite sauce, as the proportion of that flavour is but small; the water that has boiled fowls, veal, or rabbit; or a little broth, that may be in the house; or the feet and necks of chickens; for raw or dressed veal, will suffice. Stew with a little water any of these, with a bit of lemon-peel, some sliced onion, some white peppercorns, a little pounded mace or nutmeg, and a bunch of sweet herbs, until the flavour is good; then strain it, and add a little good cream, a piece of butter, and a little flour; salt to the taste. A squeeze of lemon may be added after the sauce is taken off the fire, shaking it well. Yolk of egg is often used for fricassees, but cream is better, as the former is apt to curdle.

Another, cheaper, but very good.—Add to a little boiling milk a blade of mace, and thicken with flour and butter, and flavour with pepper, salt, and a little Worcestershire sauce, or cucumber or mushroom ketchup. If it is desired richer, a little cream should be put, instead of all milk. This will do for fish sauce, with the addition of a little anchovy; and if oyster, shrimp, or lobster sauce is required, leave out the anchovy.

(*b*) AN EXCELLENT SAUCE FOR CARP OR BOILED TURKEY.—Rub half a pound of butter with a tea-spoonful of flour, put to it a little water, melt it, and add nearly a quarter of a pint of thick cream and half an anchovy chopped fine, not washed; set it over the fire, and as it boils up add a large spoonful of real India soy; if that does not give it a fine colour put a little more; turn it into the sauce-tureen, and put some salt and half a lemon; stir it well to hinder it from curdling.

(*c*) ONION SAUCE.—Boil the onions gently in milk and water till they are quite soft, then rub them through a colander with a wooden spoon, and boil them up with cream or the yolk of an egg, beaten up with milk or with melted butter.

(*d*) MUSHROOM SAUCE.—Wash and pick a pint of young mushrooms, and rub them with salt to take off the tender skin; put them into a saucepan with a little salt, some nutmeg, a blade of mace, a pint of cream, and a good piece of butter rubbed in flour. Boil them up and stir them till done; then pour the sauce round the chickens, &c. Garnish with lemon. If you cannot get fresh mushrooms, use pickled ones done white, with a little mushroom powder added to the cream, &c.

(*e*) LEMON WHITE SAUCE FOR BOILED FOWLS.—Put the peel of a small lemon, cut very thin, into a pint of sweet rich cream, with a sprig of lemon thyme, and ten white peppercorns. Simmer gently till it tastes well of the lemon; then strain it; and thicken it with a quarter of a pound of butter, and a dessert-spoonful of flour rubbed in it. Boil it up; then pour the juice of the lemon strained into it, stirring it well. Dish the chickens, and then mix a little white gravy, quite hot, with the cream, but do not boil them together; add salt to the taste.

(*f*) LIVER SAUCE.—Chop boiled liver of rabbits or fowls, and put it in melted butter with a very little pepper and salt, and some parsley; give it one boil and it is ready. *Or*, cut the livers and slices of lemon in dice, with scalded parsley and hard eggs; add salt, and mix them with butter, boil them up, and pour over fowls; also over roast-rabbits.

(*g*) EGG SAUCE.—Boil the eggs hard, and chop them into small pieces; then put them to melted butter, and boil up.

(*h*) PARSLEY AND BUTTER.—Boil parsley-leaves and chop very fine; then mix with melted butter and boil.

Another.—When no parsley-leaves are to be had, tie up a little parsley-seed in a bit of clean muslin and boil it a few minutes in some water. Use this water to melt the butter; and throw into it a little boiled spinach minced to look like parsley.

(*i*) SORREL SAUCE.—Mix a quarter of a pint of sorrel juice, a glass of white wine, and half a pint of gooseberries scalded. Add an ounce or two of sugar, and a bit of butter. Boil them up.

(*j*) GOOSEBERRY SAUCE.—Boil a pint of green gooseberries in sufficient water to cover them, until they are tender. Then pass them through a colander or strainer; add ten grains of ginger, and a few lumps of sugar, with a small piece of butter. Mix all together, and boil up.

(*k*) BREAD SAUCE.—Boil a large onion (cut in four), with some black peppers and milk, till the onion is quite a pap. Pour the milk, after straining it, on grated white stale bread, and cover it. In an hour put it in a saucepan, with a good piece of butter mixed with a little flour; boil up together, and serve. A little cream added is a very great improvement.

(*l*) APPLE SAUCE FOR GOOSE AND ROAST PORK.—Pare, core, and slice some apples; put them in a stone jar, then into a saucepan of water, or on a hot hearth. If on a hearth, let a spoonful or two of water be put in to hinder them from burning. When they are done, bruise them to a mash, and put to them a bit of butter the size of a nutmeg, and a little brown sugar. Serve it in a sauce-tureen.

(*m*) CURRANT SAUCE.—Boil an ounce of dried currants in half a pint of water, for a few minutes; then add a small teacupful of bread crumbs, six cloves, a glass of port wine, and a bit of butter. Stir it till the whole is smooth.

(*n*) LEMON SAUCE.—Cut thin slices of lemon into very small dice, and put them in melted butter; give it one boil and pour it over boiled fowls.

(*o*) CARRIER SAUCE FOR MUTTON.—Chop six shalots fine, and boil them up with a gill of gravy, a spoonful of vinegar, some pepper and salt.

(*p*) HORSERADISH SAUCE FOR COLD MEAT OR GAME.—Mix well together one ounce of grated horseradish, half an ounce of salt, a table-spoonful of made-mustard, and three dessert-spoonfuls of moist sugar, the same quantity of vinegar, and milk or cream to make it of the consistence of good cream, or thicker, if preferred.

(*q*) Sauce for Cold Fowl or Partridge. Rub down in a mortar the yolks of two eggs boiled hard, an anchovy, two dessert-spoonfuls of oil, three of vinegar, a shalot, Cayenne if approved, and a tea-spoonful of mustard. All the spice and herbs should be pounded before adding them.

(*r*) Dutch Sauce for Meat or Fish.—Put six spoonfuls of water and four of vinegar into a saucepan, warm and thicken it with the yolks of two eggs. Make it quite hot, but do not boil it; squeeze in the juice of half a lemon, and strain it through a sieve.

(*s*) Sauce Robart for Rumps or Steaks. Put a piece of butter, the size of an egg, into a saucepan, set it over the fire, and when browning throw in a handful of sliced onions cut small; fry them brown, but do not let them burn; add half a spoonful of flour, shake the onions in it and give it another fry; then put four spoonfuls of gravy, and some pepper and salt, and boil it gently ten minutes; skim off the fat, and add a tea-spoonful of made-mustard, a spoonful of vinegar, and the juice of half a lemon; boil it all, and pour it round the steaks. They should be of a fine yellow brown, and garnished with fried parsley and lemon.

(*t*) Sauce a-la-Maitre d'Hotel.—Put a piece of butter into a saucepan with some curled parsley, some tarragon leaves, a shalot, two leaves of balm, a little salt, lemon, or a glass of verjuice, and mix the whole with a spoon, until they are well incorporated, and simmer them for a few minutes.

(*u*) To Melt Butter.—Mix in the proportion of a tea-spoonful of flour to four ounces of the best butter, on a trencher. Put it into a small saucepan, with two or three table-spoonfuls of hot water, boil quick a minute, shaking it all the time, and turning it always in one direction. Milk used instead of water requires rather less butter, and looks whiter.

(*v*) Fennel Sauce is made like parsley and butter (see *h*).

(*w*) Caper Sauce.—Add whole capers to melted butter with a portion of the vinegar they are found in. Cream is a great improvement to the butter. A substitute for capers may be found in the nasturtium seed pickled (see page 406).

Another Substitute for Caper Sauce, inferior to Nasturtiums.—Boil parsley slowly, to let it become a bad colour, cut, but do not chop it fine; put it to melted butter, with a tea-spoonful of salt, and a dessert-spoonful of vinegar. Boil up and serve.

(*x*) Mint Sauce.—Chop mint leaves with a sharp knife, and quickly, to preserve the colour put them into a sauce-tureen with sufficient sugar to take off the extreme acidity of the vinegar, which must be added in such quantity as to make the leaves float in a liquid.

1596. Receipts for Fish Sauces:—

(*a*) Lobster Sauce.—Take a large fresh lobster, carefully pick out the berries and all the inside; cut it small; make a sauce with a lump of flour and butter, a little milk or cream, a *very* small quantity of essence of anchovy, a very little mace, beat fine, and Cayenne; then pull the rest of the lobster to pieces with two forks; add the sauce, by degrees, to the berries, and put in the lobster. Give it a boil, stirring all the time, and it is ready to serve.

(*b*) To Make Oyster Sauce.—Take the oysters, open the bodies, and remove the beards; put the former into a saucepan with the liquor and a little water; put the beards into a piece of muslin, and boil them with the oysters to extract the juice and flavour; thicken with flour and butter, and after removing the beards, add some cream, a little mace, pepper, and salt.

(*c*) Shrimp Sauce.—If the shrimps are not picked at home, pour a little water over them to wash them; put them to butter melted thick and smooth, give them one boil, and add the juice of a lemon.

(*d*) Brown Sauce for Fish.—Melt some butter in cream (instead of flour and water) with as much walnut ketchup boiled in it as will make it of a nice light brown.

(*e*) White Sauce for Fish.—Boil some cream, thicken it with flour and butter, then let it simmer till smooth; add a tea-spoonful of essence of anchovy to a tureenful, and, if it is liked, a little walnut or mushroom ketchup. For cod sauce, omit the anchovy and ketchup, and add a little ginger. If cream is scarce, use milk and the yolk of an egg.

(*f*) Fish Sauce Without Butter.—Simmer very gently a quarter of a pint of vinegar, and half a pint of water (which must not be hard), and then add an onion, half a handful of horseradish, and the following spices lightly bruised: four cloves, two blades of mace, and half a tea-spoonful of black pepper. When the onion is quite tender, chop it small with two anchovies, and set the whole on the fire to boil for a few minutes, with a spoonful of ketchup. In the meantime, have ready and well beaten the yolks of three fresh eggs; strain them, mix the liquor by degrees with them, and when well mixed, set the saucepan over a gentle fire, keeping a basin in one hand, into which toss the sauce to and fro, and shake the saucepan over the fire that the eggs may not curdle. Do not boil them, only let the sauce be hot enough to give it the thickness of melted butter.

SECT. 4.—STUFFINGS AND FORCEMEATS.

1597. These articles, whether in the form of stuffing, forcemeat, or balls, make a considerable part of good cooking by the flavour they impart to whatsoever dish they are added, if properly compounded. Exact rules for the quantities of which they are composed cannot easily be given; but the following observations may be useful, and habit will soon give knowledge in mixing them to the taste. According to what it is wanted for, should be the selection from the following list, observing that of the most pungent articles least must be used. No one flavour should predominate greatly; and if several dishes are served on the same day, there should be a marked variety in the taste of the forcemeat, as well as the gravies. It should be consistent enough to cut with a knife, but not dry and heavy.

FORCEMEAT INGREDIENTS.

ESSENTIAL.

Cold fowl or veal.
Scraped ham.
Fat bacon.
Beef-suet.
Crumbs of bread.
Parsley.
White pepper.
Salt.
Nutmeg.
Yolk and white of egg well beaten to bind the mixture.

ACCESSORY.

Oysters.
Anchovy.
Tarragon.
Savoury herb.
Pennyroyal.
Knotted marjoram.
Thyme.
Basil.
Yolks of hard eggs.
Cayenne
Garlic.
Shalot.
Chives.
Jamaica pepper, in fine powder, or two or three cloves.

The first column contains the articles of which the forcemeat may be made, without any striking flavour; and to those may be added some of the different ingredients of the second column, to vary the taste.

1598. RECEIPTS FOR STUFFING AND FORCEMEATS:—

(a) COMMON STUFFING, OR FORCEMEAT.—Take three or four ounces of suet, with an equal quantity of veal (or if for turkeys, chopped oysters), two ounces of finely-grated bread, chop these up with parsley already minced very finely, and flavour with a little lemon-peel, nutmeg or mace, white pepper and salt (lemon-thyme, or sweet marjoram, are thought an improvement by some). Then blend all with the yolks of two or three eggs well beaten.

STUFFING OR FORCEMEAT FOR FOWLS OR VEAL.—Shred a little ham or gammon, some cold veal or fowl, some beef-suet, a small quantity of onion, some parsley, a little lemon-peel, salt, nutmeg, or pounded mace, and either white pepper or Cayenne, and bread crumbs. Pound in a mortar, and bind it with one or two eggs beaten and strained, adding thyme or marjoram, or both together, according to fancy. For forcemeat patties, the mixture as above.

(b) STUFFING FOR HARE.—To make this, chop up the liver with an anchovy, some fat bacon, two ounces of suet, herbs as for veal (a), pepper, salt, nutmeg, a little onion, two ounces of crumbs of bread, and an egg to bind it all.

(c) FORCEMEAT BALLS OR CAKES.—A pound of fresh suet, one ounce of ready-dressed veal or chicken chopped fine, bread crumbs, a little shalot or onion, salt, white pepper, nutmeg, mace, pennyroyal, parsley, and lemon thyme finely shred; beat as many fresh eggs, yokes and whites separately, as will make the above ingredients into a moist paste; roll into small balls, and fry them in fresh lard, putting them in just as it boils up. When of a light brown, take them out, and drain before the fire. If the suet is moist or stale, a great many more eggs will be necessary. Forcemeat balls made in this way are remarkably light; but being somewhat greasy, some people prefer them with less suet and eggs.

Another.—Beat half a pound of lean pork or veal, and half a pound of suet, well in a mortar; put in three eggs and a little grated bread. Season with pepper, salt, nutmeg, two cloves, lemon peel, and a blade or two of mace.

(d) FORCEMEAT BALLS FOR FISH SOUPS OR STEWS.—Beat the flesh and soft parts of a middling lobster, half an anchovy, a large piece of boiled celery, the yolk of a hard egg, a little Cayenne, mace, salt, and white pepper, with two table-spoonfuls of bread crumbs, and one of oyster liquor, two ounces of butter warmed, and two eggs long beaten; make into balls, and fry of a fine brown in butter.

(e) LITTLE EGG BALLS.—Beat three hard yolks of eggs in a mortar, and make into a paste with the yolk of a raw one, roll it into small balls, and throw them into boiling water for two minutes to harden.

(f) STUFFING FOR GEESE AND DUCKS.—(See (i), page 453.)

(g) STUFFING FOR SUCKING PIGS.—(See (g), page 452).

(h) THE STUFFING FOR ROAST PORK is the same as for Geese and Ducks.

SECT. 5.—SAUSAGES, BLACK PUDDINGS, &c.

1599. THESE SAVOURY COMPOUNDS are made with various materials, chopped and mixed together either by the hand or with the aid of a common chopper and board, or with a sausage-making machine, which last acts remarkably well, but is not required often enough in private houses to warrant its purchase. They are afterwards put into properly-cleaned lengths of the entrails of the ox, sheep, calf, or pig, and tied at short intervals with common fine string. In cleaning the entrails they are turned inside out, stretched on a smooth stick, and well scraped and washed in several waters.

(*a*) PORK SAUSAGES.—Chop fat and lean of pork together; season it with sage, pepper, and salt, and add two or three berries of allspice; *half-fill* hogs' entrails that have been soaked and made extremely clean; or the meat may be kept in a very small pan closely covered, and rolled and dusted with a very little flour before it is fried; serve on mashed potatoes put in a form, plain, or browned with the salamander or before the fire; they must be pricked with a fork before they are dressed or they will burst, unless they are very carefully fried. (See Frying, page 464.)

(*b*) LARGE SMOKED SAUSAGES OR POLONIES.—Season fat and lean pork with some salt, saltpetre, black pepper, and allspice, all in fine powder, and rub into the meat; the sixth day cut it small, and mix with it some shred shalot or garlic, as fine as possible; have ready an ox-gut that has been scoured, salted, and soaked well, and fill it with the above stuffing; tie up the ends, and hang it to smoke as you would hams, but first wrap it in a fold or two of old muslin; it must be high-dried. Some eat it without boiling, but others like it boiled first. The skin should be tied in different places, so as to make each link about eight or nine inches long.

(*c*) OXFORD SAUSAGES.—Chop a pound and a half of pork, and the same of veal, cleared of skin and sinews; add three-quarters of a pound of beef-suet; mince and mix them; steep the crumb of a penny-loaf in water, and mix it with the meat, with also a little dried sage, pepper, and salt.

(*d*) BEEF AND VEAL SAUSAGES.—These are each made in the same way as for pork (*a*), but there is generally a larger proportion of spice; the herbs added are marjoram, thyme, and parsley instead of sage.

1600. TO MAKE BLACK PUDDINGS.—The blood must be stirred with salt till cold. Put a quart of it, or rather more, to a quart of whole grits, to soak one night; and soak the crumb of a quartern loaf in rather more than two quarts of new milk made hot. In the meantime prepare the entrails by washing, turning, and scraping with salt and water, and changing the water several times. Chop fine a little winter-savoury and thyme, a good quantity of penny-royal, pepper and salt, a few cloves, some allspice, ginger, and nutmeg; mix these with three pounds of beef-suet and six eggs well beaten and strained; and then beat the bread, grits, &c., all up with the seasoning; when well mixed, have ready some hog's fat cut into large bits, and as you fill the skins put it in at proper distances. Tie in links, only half filled, and boil in a large kettle, pricking them as they swell, or they will burst. When boiled, lay them between clean cloths till cold, and hang them up in the kitchen. When to be used, scald them a few minutes in water; wipe, and put them into a Dutch oven. If there are not skins enough, put the stuffing into basins, and boil it covered with floured cloths; and slice and fry it when to be used.

Another Receipt.—Soak all night a quart of bruised grits in as much boiling hot milk as will swell them and leave half a pint of liquid. Chop a good quantity of penny-royal, some savoury and thyme; then add salt, pepper, and allspice, finely powdered. Mix the above with a quart of the blood, prepared as before directed; then half fill the skins, after they have been cleaned thoroughly, and put as much of the leaf (that is, the inward fat) of the pig as will make it pretty rich. Boil as before directed. A small quantity of leeks finely shred and well mixed is a great improvement.

1601. WHITE HOG'S PUDDINGS.—When the skins have been soaked and cleaned as before directed, rinse and soak them all night in rose-water, and put into them the following filling:—Mix half a pound of blanched almonds cut into seven or eight bits, with a pound of grated bread, two pounds of marrow or suet, a pound of currants, some beaten cinnamon, cloves, mace, and nutmeg, a quart of cream, the yolks of six and whites of two eggs, a little orange-flower water, a little fine Lisbon sugar, and some lemon-peel and citron sliced, and half fill the skins. To know whether properly flavoured, warm a little in a pannikin. In boiling, much care must be taken to prevent the puddings from bursting. Prick them with a small fork as they rise, and boil them in milk and water. Lay them in a table-cloth till cold.

1602. SAVELOYS.—These are made of *salt* pork, of which the fat and lean are mixed together and chopped with a fourth part of bread, a little pepper and allspice, and a rather liberal use of sage leaves. They are put in skins as for pork sausages, and boiled slowly for half an hour, then put by and eaten cold.

CHAP. X.

VEGETABLES.

SECT. 1.—GENERAL OBSERVATIONS IN DRESSING VEGETABLES.

1603. **VEGETABLES** should be carefully cleaned from insects and nicely washed. Boil them in plenty of water, and drain them the moment they are done enough. If overboiled they will lose their beauty and crispness. Bad cooks sometimes dress them with meat, which is wrong, except carrots or cabbage with boiling beef.

1604. **IN ORDER TO BOIL VEGETABLES OF A GOOD GREEN COLOUR**, take care that the water boils when they are put in. Make them boil very fast. Do not cover, but watch them, and if the water has not slackened you may be sure they are done when they begin to sink. Then take them out immediately, or the colour will change. Hard water, especially if chalybeate, spoils the colour of such vegetables as should be green. To boil them green in hard water, put a tea-spoonful of carbonate of soda or potash into the water when it boils, before the vegetables are put in.

SECT. 2.—SPECIAL DIRECTIONS FOR DRESSING VEGETABLES.

1605. **RECEIPTS FOR DRESSING POTATOES.**

(*a*) To **BOIL** (*an excellent Receipt*).—Pare or merely wash them, as preferred, and put them in a covered saucepan of cold water, with a tea-spoonful of salt; boil them till they are done (which can be ascertained by running a fork into them) and begin to break a little; then pour the water from them, and hold the saucepan, with the lid off, over the fire for two or three minutes, shaking well at the end of the time; put the lid loosely on so as to allow the steam to escape, and sprinkle a very little salt over them; let them stand till wanted (the sooner the better), but they may remain in this way, if necessary, half an hour or more. Time, twenty to thirty minutes, or longer if very large.

Another Way.—Set them on a fire, without paring them, in cold water; let them half boil, then throw some salt in and a pint of cold water, and let them boil again till almost done. Pour off the water, and put a clean cloth over them, and then the saucepan cover, and set them by the fire to steam till ready. Many persons prefer steamers. Potatoes look best when the skin is peeled, not cut. Do new potatoes the same; but be careful they are taken off in time, or they will be watery. Before dressing, rub off the skin with a cloth and salt, and then wash.

(*b*) To **BROIL**.—Parboil, then slice and broil them. *Or*, parboil, and then set them whole on the gridiron over a very slow fire, and when thoroughly done send them up with their skins on. This last way is practised in many Irish families.

(*c*) To **ROAST**.—Half boil, take off the thin peel, and roast them of a beautiful brown. *Or*, put them with the peel on in the ashes of a wood fire.

(*d*) To **FRY**.—Take the skin off raw potatoes, slice them, soak in cold water, and fry them, either in butter or thin batter. *Or*, as

POTATO CHIPS.—Wash and peel some potatoes, then pare them, ribbon-like, into long lengths; put them into cold water to remove the strong potato flavour; drain them, and throw them into a pan with a little butter, and fry them a light brown. Take them out of the pan, and place them close to the fire on a sieve lined with clean writing paper to dry, before they are served up. A little salt may be sprinkled over them.

(*e*) To **BAKE**.—Wash and put them whole and unpeeled into a slow oven, and let them remain from an hour and a half to two hours.

(*f*) To **MASH**.—Boil the potatoes, peel them, and break them to paste; then to two pounds of them add a quarter of a pint of hot milk, a little salt, and two ounces of butter, and stir it all well over the fire. Either serve them in this manner, or place them on the dish in a form, and then brown the top with a salamander, or in scallops before the fire.

(*g*) **NEW POTATOES.—TO BOIL.**—Procure them of equal size, and if very young, wash them only; if older, rub off the skins with a scrubbing-brush or coarse cloth. Put them into boiling water till tender, and sprinkle a little salt over them, and put a lump of butter in; shake up and serve. Time, fifteen to twenty minutes.

(*h*) **COOKED POTATOES.—TO FRY.**—Heat some dripping or lard in a fryingpan, then drop in some slices of boiled potatoes, or broken fragments will do quite as well, stir them with a spoon, and in about ten minutes they will be browned enough, then drain off any superfluous fat, add a little pepper and salt, and serve.

(*i*) **OLD POTATOES IN A NEW DRESS.**—Wash and pare some large old potatoes, then, with an iron scoop, make them into small balls the size of young ones; steam them, and serve with white sauce poured over them.

(*j*) **POTATO BALLS.**—Mash very smooth some well-boiled potatoes with a little cream (or butter and milk) and salt, then form them into balls the size of a peach, and indented like one, or into the shape of a pear; warm through, and brown slightly on one side in a Dutch oven. The pears should be served on a napkin with the broad end downwards, and a bit of stalk stuck in the other end. They may also, as a variety, be placed in a well-thickened brown gravy, poured round but not over them.

(*k*) Rissoles de Pomme de Terre.—Mix with potatoes mashed with milk some fine chopped herbs; roll into long rissoles, fry them a light brown, and send them as hot as possible to table. *Or*, brush them over with yolk of egg, and dip them in bread-crumbs; then having melted a little butter in a saucepan, put in the rissoles, and shake them gently over the fire till they are a light brown.

1606. Carrots and Parsnips require a good deal of boiling. When young, wipe off the skin after they are boiled; when old, boil them with the salt meat, and scrape them first. (Parsnips should always be scraped.) Average time, from twenty to forty-five minutes.

(*a*) To Stew Carrots White.—Half boil, then nicely scrape, and slice them into a stewpan. Put to them half a teacupful of any weak broth, some pepper and salt, and half a cupful of cream; simmer them till they are very tender, but not broken. Before serving, rub a very little flour with a bit of butter, and warm up with them. If approved, chopped parsley may be added ten minutes before served.

(*b*) To Stew Carrots Brown.—Take six large carrots, wash and scrape them well, put them into boiling water, and let them boil for half an hour; then take them out, drain, and cut each carrot into as many round balls as it will make; put them into the stewpan with a pint of gravy, flavoured with a little pepper, salt, mushroom ketchup, and Worcestershire sauce; let them simmer for twenty minutes, then take them out, pile them in the centre of the dish, thicken the gravy with a little flour and butter, pour it over the carrots and serve.

Parsnips would be very good cooked in this way.

(*c*) To Mash Parsnips or Carrots.—Boil them till tender, pare, and then mash them and warm in a stewpan with a little cream, a good piece of butter, and pepper and salt.

(*d*) Fricassee of Parsnips.—Boil in milk till they are soft, then cut them lengthways into bits two or three inches long, and simmer in a white sauce made of two spoonfuls of broth, a bit of mace, half a cupful of cream, a bit of butter, and some flour, pepper, and salt.

1607. Beet-roots make a very pleasant addition to winter-salad, of which they may agreeably form a full half, instead of being only used to ornament it. This root is cooling and very wholesome. It is extremely good boiled and sliced with a small quantity of onion; or stewed with whole onions, large or small, as follows—boil the beet with the skin on, slice it into a stew-pan with a little broth, and a spoonful of vinegar; simmer till the gravy is tinged with the colour, then put it into a small dish, and make a circle round of the button onions, first boiled till tender. Time, one hour and a half to two hours.

1608. Turnips.—To Boil.—Pare them, and if large, split them; if small, leave them whole. Put them in boiling water with a little salt, and keep them well covered until they are tender. They require from fifteen to thirty minutes.

(*a*) To Mash.—Boil them as above till very tender, then press the water from them between two plates, after which mash them, and pass them through a colander. Then put them into a saucepan, add a little salt, and some milk or cream; keep stirring till quite hot, then serve.

1609. Onions.—To Stew.—Peel six large onions; fry gently of a fine brown, but do not blacken them; then put them into a small stewpan with a little weak gravy, pepper, and salt; cover and stew gently for two hours. They should be lightly floured at first.

(*a*) To Roast.—They should be done with all the skins on; they eat well alone, with only salt and cold butter, or with roast potatoes or beet-roots.

(*b*) Spanish Onions.—To Stew.—Boil four onions, and when done scoop out the middle, and fill them with forcemeat; fry them a light brown, and make a rich gravy and pour over them. This makes a good corner dish.

(*c*) To Fry Onions for Steaks, Herrings, &c.—Peel the onions, cut them in slices, fry them in the fat from the steak, &c., which ought to be fried first and kept hot the while. They are usually served in the same dish with the steak or fish.

1610. Celery.—To Stew.—Wash six heads and strip off the outer leaves; either halve or leave them whole, according to their size; cut into lengths of four inches; put them into a stewpan with a cup of broth or weak white gravy; stew till tender; then add two spoonfuls of cream, and a little flour and butter, seasoned with pepper, salt, and nutmeg, and simmer all together.

1611. Asparagus.—To Boil.—Clean the asparagus, and cut all of a length, then boil till the tops are quite tender; have ready a toast to place them on, and serve while hot. A little mint boiled with asparagus is a great improvement to its flavour. Time, about twenty minutes.

1612. Vegetable Marrow.—To Boil or Stew.—This excellent vegetable may be boiled till tender; then divide it lengthways into two, and serve it up on toast, accompanied by melted butter; or when nearly boiled, divide it as above, and stew gently in gravy like cucumbers. Care should be taken to choose young ones not exceeding six inches in length. Time, from half an hour to one hour.

(*a*) To Mash.—When too old and large to send to table as above, they should be cut in quarters, the seeds taken out, and boiled till tender; then drain the water from them through a colander, mash them with a little pepper, butter, and salt, and serve on a buttered toast.

1613. Sea Kale must be boiled very white, and served on toast like asparagus and vegetable marrow. White sauce may be poured over it. Time for boiling, from half an hour to three-quarters.

To Stew Brown.—Boil the kale, as above; then drain it, and simmer slowly in a stewpan, with from half a pint to one pint of rich and well-seasoned clear gravy, for twenty minutes, and serve.

1614. Laver.—This is a plant that grows on the rocks near the sea in the west of England, and is sent in pots prepared for eating. Set it in a dish over a lamp, with a bit of butter, and the squeeze of a Seville orange; stir it till hot. It is eaten with roast meat, and is supposed to be a great sweetener of the blood. It is seldom liked at first, but people become extremely fond of it by habit.

1615. Artichokes.—To Dress.—Trim a few of the outside leaves off, and cut the stalk even; if young, half an hour will boil them; they are better for being gathered two or three days first. Serve them with melted butter, in as many small cups as there are artichokes. Time, nearly an hour.

(*a*) Artichoke Bottoms.—If dried, they must be soaked, then stewed in weak gravy, and served with or without forcemeat in each. *Or*, they may be boiled in milk, and served with cream sauce; or added to ragouts, French pies, &c.

(*b*) Jerusalem Artichokes must be taken up the moment they are done, or they will be too soft. They usually take about twenty to twenty-five minutes. They may be boiled plain, or served with white fricassee-sauce, or mashed like turnips, seasoning with pepper and salt, and adding a little butter.

1616. Spinach requires great care in washing and picking it. When that is done, throw it into a saucepan that will just hold it, sprinkle it with a little salt, and cover close. The pan must be set on the fire, and well shaken. When done, beat the spinach well with a small bit of butter; it must come to table pretty dry, and looks well if pressed into a tin mould in the form of a large leaf, which is sold at the tin shops. A spoonful of cream is an improvement.

1617. Cauliflower, Cabbage, &c.:—

(*a*) Cauliflowers.—To Boil.—Choose those that are close and white, cut off the green leaves, and look carefully that there are no caterpillars about the stalk. Soak an hour in cold water, then boil them in milk and water, and take care to skim the saucepan, that not the least foulness may fall on the flower. They must be served very white, and *rather* crisp, but still sufficiently done. Time, twenty-five minutes or more.

(*b*) Cauliflower in White Sauce.—Half boil it, then cut it into handsome pieces, and lay them in a stewpan with a little broth, a bit of mace, a little salt, and a dust of white pepper; simmer half an hour, then put a little cream, butter, and flour; shake and simmer a few minutes and serve.

(*c*) Cauliflower Omelet (*American*).—Take the white part of a boiled cauliflower after it is cold, and chop it very small, and mix with it a sufficient quantity of well-beaten egg, to make a very thick batter, then fry it in fresh butter in a small pan, and send it to table hot.

(*d*) Cauliflower Fried (*American*).—Having laid a fine cauliflower in cold water for an hour, put it into a pot of hot water that has been slightly salted (milk and water will be still better), and boil it twenty-five minutes, or till the large stalk is perfectly tender, then divide it equally into small tufts, and spread it on a dish to cool. Prepare a sufficient quantity of batter, made in the proportion of a table-spoonful of flour, and two table-spoonfuls of milk to each egg; beat the eggs very light, then stir into them the flour and milk alternately, a spoonful of flour and two spoonfuls of milk at a time. When the cauliflower is cold, have ready some fresh butter in a frying pan over a clear fire. When it has come to a boil, and has done bubbling, dip each tuft of cauliflower twice into the batter, and fry them a light brown; send them to table hot. Brocoli may be fried in this manner.

(*e*) Brocoli.—Cut the heads with short stalks, and pare the tough skin off them. Tie the small shoots into bunches, and boil them a shorter time than the heads. Some salt must be put into the water. Serve with or without toast.

(*f*) An Excellent Way of Boiling Cabbage.—Having trimmed the cabbage, and washed it well in cold water (examining the leaves to see that no insects are lurking among them), cut it almost into quarters, but do not divide it entirely down at the stem, which should be cut off just below the termination of the leaves. Let it lie an hour in a pan of cold water. Have ready a potful of boiling water, seasoned with a small tea-spoonful of salt. Put the cabbage into it, and let it boil for an hour and a half, skimming it occasionally. Then take it out; put it into a colander to drain, and when all the hot water has drained off, set it under the hydrant. Let the hydrant run on it, till the cabbage has become perfectly cold all through. If you have no hydrant, set it under a pump, or keep pouring cold water on it from a pitcher. Then, having thrown out all the first water, and washed the pot, fill it again, and let the second water boil. During this time the cabbage under the hydrant will be growing cold. Then put it on again in the second water, and boil it two hours, or two and a half. Even the thickest part of the stalk must be perfectly tender all through. When thoroughly done, take up the cabbage, drain it well through the colander, pressing it down with a broad ladle to squeeze out all the moisture; lay it in a deep dish, and cut it entirely apart, dividing it into quarters. Lay some bits of fresh butter among the leaves, add a little pepper, cover the dish, and send it to table hot.—(*Miss Leslie*—a great improvement.)

1618. Beans and Peas:—

(*a*) Broad Beans.—To Boil.—Boil tender with a bunch of parsley, which must be chopped to serve with them. Bacon or pickled pork must be served to eat with, but not boiled with them. Time, twenty to twenty-five minutes.

(*b*) Broad Beans Mashed.—Take *old* broad beans, boil them for one hour, mash them through a coarse sieve, and mix with them a little butter, pepper, and salt. Put the mash into a hot basin or mould, and turn it out before serving.

(*c*) Windsor Beans.—Fricasseed.—When grown large, but not mealy, boil, blanch, and lay them in a white sauce ready hot; just heat them through in it, and serve. If any are not of a fine green, do not use them for this dish.

(*d*) French Beans.—To Boil.—String, and cut them into four or eight; the last looks best. Lay them in salt and water, and when the saucepan boils put them in with some salt. As soon as they are done serve them immediately, to preserve the green colour. Or when half-done drain the water off, and put them into two spoonfuls of broth strained; and add a little cream, butter, and flour, to finish doing them.

(*e*) To Stew French Beans.—Boil the French beans (as at par. *d*). Make a rich clear gravy, well flavoured; drain the beans perfectly dry, and put both into a stewpan, and simmer for a quarter of an hour or twenty minutes; serve hot. Peas may also be stewed in this way.

(*f*) Peas.—To Boil.—Should be young and of a good sort. They must not be over-done, nor in much water. Boil some mint with them, and chop it to garnish them, and stir a piece of butter in with them. If either too young or too old, a little sugar boiled with them is an improvement. Time, about fifteen minutes.

(*g*) Green Peas.—To Stew.—Take a quart of peas, three cabbage lettuces, cut small, put them into a stewpan with a piece of butter the size of an egg (and a slice of raw ham, if you like), an onion stuck with cloves; let them stew gently till the peas are half-done, then add a pint of good gravy; when stewed, thicken with flour and butter, the yolks of two eggs, and a teacupful of cream. Keep stirring after the eggs are in or it will curdle. Some think a tea-spoonful of white powdered sugar is an improvement. Gravy may be added, but then there will be less of the flavour of the peas. Chop a bit of mint, and stew in them.

(*h*) Old Peas.—To Stew.—Steep them in water all night, if not fine boilers; otherwise half an hour would do; put them into water, just enough to cover them, with a good bit of butter, or a piece of beef or pork. Stew them very gently till the peas are soft, and the meat is tender; if it is not salt meat, add salt and a little pepper. Serve them round the meat.

(*i*) Haricots Blancs.—These beans, so much used in France, are dressed exactly like the old peas (*h*); but the flavour is not generally liked in this country.

1619. Mushrooms.—To Stew Brown.—Peel the mushrooms and cut off the end of the stalk, then cut them into four or six, according to their size, add a good deal of pepper and salt, with a very small quantity of water; stew them in an earthen pipkin three or four hours as slow as possible; put sippets in the dish. They will keep several days, but should be done as soon as gathered.

(*a*) To Stew Buttons White.—Peel some mushrooms, and cut off the end of the stalk, put them in a stewpan with some milk, a little Cayenne pepper, and salt; let them stew gently, and thicken with flour and butter.

Another and better Receipt.—Peel some mushrooms, sprinkle them with a little pepper and salt; and lay them in a stewpan; set them on a stove or by the side of the fire to draw the liquor from them, then add cream sufficient to cover them, or a little milk thickened with butter and flour; give them a boil up. Serve with or without sippets round the dish.

1620. CUCUMBERS.—TO STEW.—Pare, and then slice some cucumbers not too thin, put them into a stewpan with some onions and a little salt. Let them stew in their own liquor a little while, then drain all that away, and put to them one anchovy, a little spice, some good gravy, and a little red wine or ketchup. When the anchovy is dissolved, thicken with flour and butter.

Another.—Peel and cut cucumbers in quarters, take out the seeds, and lay them on a cloth to drain off the water. When they are dry, flour and fry them in fresh butter, let the butter be quite hot before putting in the cucumbers; fry them brown, then with an egg-slice lay them on a sieve to drain the fat from them. If the taste is approved of, fry a few small or sliced onions to put with them. When drained, put them into a stewpan with as much gravy as will cover them. Stew slowly till they are tender. Take out the cucumbers with a slice, thicken the gravy with flour or butter; give it a boil up, season with pepper and salt, and put in the cucumbers; as soon as warm they are ready to serve. The above, rubbed through a sieve, may be called "cucumber sauce," and is a favourite sauce with lamb or mutton-cutlets, stewed rump-steaks, &c.; for the latter a third part of onions may be added to the cucumbers.

1621. SORREL.—TO STEW, FOR FRICANDEAU AND ROAST MEAT.—Wash the sorrel and put it into a silver vessel, or stone jar, with no more water than hangs to the leaves; simmer it as slowly as possible, and when done enough add a bit of butter, and beat it well.

1622. HERBS.—TO FRY, AS IN STAFFORDSHIRE.—Clean and dry a good quantity of spinach leaves, two large handfuls of parsley, and a handful of green onions; chop the parsley and onions, and sprinkle them among the spinach; set them all on to stew with some salt, and a bit of butter the size of a walnut; shake the pan when it begins to grow warm, and let it be closely covered over a slow stove till done enough. It is served with slices of broiled calf's liver, small rashers of bacon, and eggs fried; the last on the herbs, the others in a separate dish.

1623. TURNIP TOPS.—TO BOIL.—Gather young turnip tops in the spring, wash and drain well, put them into plenty of boiling water, with a little salt; boil for twenty minutes, or a little longer; then take them out and serve plain after draining them, or chop them fine and mix them with a little butter, pepper, and salt.

1624. NETTLES AND DANDELIONS, gathered before they are in flower, may be dressed like turnip tops, and served on toast like spinach, and are a valuable and wholesome addition to the list of vegetables.

1625. TO DRESS TOMATOES.—Boil them in a saucepan of boiling water for ten minutes, drain them, and either serve whole or mashed up, with a little pepper and salt, or roast them in a Dutch oven, taking care to turn them, and serve.

1626. HOP TOPS SERVED AS ASPARAGUS (*excellent*).—Break off the young shoots of hops, tie them in bundles, boil them with a little meat in the water for twenty minutes. Serve as asparagus. The shoots of asparagus-kale may be boiled in the same way.

1627. SAVOURY RICE (*a substitute for vegetables*).—Wash a breakfast-cup of rice in cold water, and strain it. Make a good beef gravy, well seasoned with one or two large onions; when properly flavoured, strain off all the grease, add the rice, and let it stew slowly for about an hour, stirring it occasionally. When in season, add two tomatoes and a spoonful of Hervey's sauce. The beef must be fried before making the gravy.

TO DRESS RICE FOR CURRY.—Boil the rice loose in a great quantity of cold water, with a large spoonful of salt, until it separates and is tender, but not to jelly. Drain it, and put it for a few minutes before the fire in a colander, to make it quite dry. Then serve it, keeping it as loose as possible.

SECT. 3.—SALADS.

1628. ORDINARY ENGLISH SALADS:—

(*a*) A BLEACHED LETTUCE well-washed, and cut up with a few slices of beet-root, is the universal salad in this country; but by some people a few very young onions or chives are added. After being cut up, a mixture variously compounded (see par. 1629), is poured over it, and mixed with the salad-spoon and fork.

(*b*) ENDIVE is used in the same way as lettuce; as also is mustard-and-cress, mixed with sliced radish and water-cress.

(*c*) ANOTHER SALAD.—Add to the lettuce two beet-roots as above, a stick of celery cut small, radishes if in season, mustard-and-cress, and the white of a hard boiled egg of which the yolk has been used in the salad dressing. Sorrel is sometimes added.

(*d*) LOBSTER SALAD.—Mix with some ordinary salad mixture (par. 1629) the boiled eggs of a lobster; then put in a salad-bowl a layer of salad herbs, lettuce being the best; upon these strew pieces of the flesh and interior of the lobster itself, with some of the eggs; then another layer of herbs, upon which place more lobster and eggs, and upon this pour the salad dressing, taking care to run it gradually over the whole; lastly, on the top of all place a few of the best leaves of the salad, shred very fine, and round the edge place some ornamental cuttings of cucumber, radishes, &c.

(*e*) CRABS, PRAWNS, SHRIMPS, SALMON, or any cold fish may be used in the same way as lobster (see *f*).

(*f*) FRENCH SALADS are mixed with less care than is used by the English, inasmuch as the flavour of raw oil is not objected to by their consumers. The lettuce, endive, dandelion-leaves, or other salad-herbs, are merely chopped up and incorporated with a little tarragon, chervil, and garlic or shalot; after which a mixture of half a tea-spoonful of pepper, a whole one of salt, two table-spoonfuls of vinegar, and four of oil, are simply stirred together with a fork and poured over the salad.

(*g*) COLD MEAT, FOWL, FISH, AND GAME, mixed up with the above salad in fine shreds or slices, and flavoured in the same way, are extensively used in France.

(*h*) ANOTHER FRENCH SALAD.—Chop three anchovies, a shalot, and some parsley small; put them into a bowl, with two table-spoonfuls of vinegar, one of oil, a little mustard, and salt; when well mixed, add by degrees some cold roast or boiled meat in *very thin* slices; put in a few at a time, not exceeding two or three inches long; shake them in the dressing, and then add more; but cover the bowl close, and let the salad be prepared three hours before it is to be eaten. Garnish with parsley, and a few slices of the fat of the meat.

(*i*) SALAD MAYONAISE.—Beat up well the yolks of two eggs, mix and pour in salad oil, and a few drops of vinegar, until there is sufficient sauce, and it is the consistency of thick cream. Cut slices of cold meat or fowl, and divide in pieces with cold boiled eggs and the hearts of fine lettuces laid in the dish. Then pour over it all the sauce.

1629. RECEIPTS FOR SALAD MIXTURES:—

(*a*) ENGLISH SALAD MIXTURE.—Beat a raw egg, with a salt-spoonful of salt, until it is thoroughly smooth, then incorporate with it a tea-spoonful of mustard, made rather thicker than usual. When these are quite smooth, add by degrees one, two, or three table-spoonfuls, or even more, of good salad-oil, taking care to blend each portion of it with the egg before adding more. This ought to make any quantity, up to a teacupful, of a tenacious mass, so thick that a tea-spoon will stand up in it, and as smooth as honey. Dilute it with vinegar till it assumes the consistence of thick cream. No salad mixture is so smooth and rich as this, and at the same time the original oily flavour is completely lost, from the *raw* egg converting the oil into an emulsion. A little anchovy may be added if desired.

(*b*) *Another.*—Boil an egg hard, take the yolk, after it is cold, and mix it up smoothly with a little cream, vinegar, mustard and salt.

(*c*) *Another.*—Take the yolk of a hard-boiled egg, rub it down with a spoonful of dry mustard, a little salt, and a floury potato well washed and boiled. Then add a spoonful of good oil, another of cream, and when thoroughly and smoothly incorporated, add about a spoonful of vinegar.

(*d*) For French Salad Mixture, see (*f*), (*h*), and (*i*) par. 1628.

CHAP. XI.

MADE-DISHES OR ENTREES.

SECT. 1.—GENERAL REMARKS.

1630. This chapter contains the receipts for warming up cold meats in the shape of hashes, minced-meats, &c., by which they are rendered much more palatable to most people, and not much more expensive. No one who has tried the experiment can contend that they are as economical as the cold meat would be, if eaten in its plain unadorned state, but as few people like cold beef or cold mutton for three or four consecutive days, it is well to be able to vary the bill of fare, even if it is done at a trifling increase in the weekly bills. The very circumstance, that warmed-up dishes are more generally liked than cold meats, proves that more will be eaten, and consequently, that they are more costly, for the difference in consumption is a main item affecting all systems of housekeeping. To the rigid economist, therefore, I cannot advise these improved editions of cold meats, but to those who can afford the slight difference in the cost, they are unobjectionable, especially as they may be made even more wholesome than the plain cold meat, which, moreover, few will eat without the addition of indigestible cold pickles, or a large proportion of salad. Besides these warmed-up dishes, some few side-dishes, entrées, &c., are given, which are serviceable for more than ordinary occasions, or for those who habitually indulge in such luxurious fare.

1631. **The Utensils** required are chiefly the various-sized stewpans; but for browning over certain dishes a salamander is almost imperatively necessary. This is a long iron in the form shown at *fig.* 136, and when heated in the fire and held over a dish, already at a boiling heat, it browns the surface, and makes it much more pleasing to the eye.

1632. **The Bain-marie** is merely a water-bath (see *fig.* 135), capable of holding several stewpans or small saucepans. It is chiefly used for making such dishes as will be injured by a high rate of boiling, and also for keeping them warm without injury.

1633. Many Entrées are now sent to table heated with a spirit-lamp under them, and certainly it is the only way of ensuring a proper temperature. Silver and plated dishes are made and sold expressly for the purpose, and therefore it is not necessary to describe them here, especially as their construction is exceedingly simple.

1634. **To Pot Meats.**—Take any tender and well-done meat, free from fat, bone, skin and gristle. Pound it thoroughly in a mortar till it is reduced to a paste, putting in a part at a time. When all is thoroughly reduced, add the spice and some butter, according to the nature of the meat, ham requiring less than veal, and veal again less than beef. After mixing them together in the most thorough manner, press the potted meat into jars with force enough to expel all the air, then pour over the top a layer of clarified butter about a third of an inch thick, which is removed before using the meat.

1635. **To Clarify Butter for Potted Things.**—Put it into a sauce-boat, and set that over the fire in a stew-pan that has a little water in. When melted, take care not to pour the milky part over the potted things, as it will sink to the bottom.

Sect. 2.—Dressed Meats and Poultry Warmed-up.

1636. **Beef or Mutton Warmed-up** in various ways:—

(*a*) **Minced Beef or Mutton.**—Make a gravy according to par. 1593; thicken it with flour (or arrowroot, which is still better), then add to it the minced-up beef, and warm it. In warming up any meats in this way, they should be done in a stewpan on a hot-plate, or in a water-bath, commonly called a *bain-marie*, as it is owing to *boiling* hashes or minces that they get hard. All sorts of stews, or meat dressed a second time, should be only gently simmered, and that for a short time only, so as to be just warmed through. After mincing the beef with some of the fat, season it, and add boiled carrots, with a little onion or shalot chopped fine. Have a small hot dish with sippets of bread ready, and pour the mince into it, but first mix a large spoonful of vinegar with it; if shalot vinegar is used as a seasoning, there will be no need of the onion or the raw shalot.

Minced Mutton or Beef, Browned.—Cut some lean meat from a roast leg of mutton, chop it fine, season it with pepper and salt, chopped parsley, and a little onion; mix altogether with a quarter of a pound of grated bread, moisten with a table-spoonful of vinegar and a cup of good gravy; when put into the dish lay an ounce of butter in small bits on the top, grate bread over it, and add a little more butter; brown before the fire.

(*b*) **To Hash Beef or Mutton.**—Do it the same as in the last receipt, except that the meat is to be in slices, and add a spoonful of walnut liquor or ketchup.

Another Way.—Cut the meat into small thin slices, put two table-spoonfuls of flour into a dish, with a tea-spoonful of salt, and a salt-spoonful of pepper; mix them together, and rub the slices of meat with it; place in a large and shallow stewpan a piece of butter the size of a walnut (and if liked, three small onions cut in small pieces); put it on the fire till the onion is browned, then add the meat, which warm on one side, and turn over. When warmed through, pour over it a pint of hot water, and two pickled gherkins cut in slices, and a table-spoonful of the vinegar from the pickle, also a table-spoonful of walnut ketchup; boil up and serve with sippets of toasted bread.

Another Way.—Cut thin slices of mutton or beef, and put into half a pint of broth, let it simmer a quarter of an hour and *skim all the fat from it;* then season it with pepper, salt, and mushroom ketchup, with a squeeze of lemon or a spoonful of vinegar; after which thicken with flour and butter. The hash eats less greasy in this way, as the flour absorbs the fat when added at first.

(*c*) **Beef en Miroton.**—Cut thin slices of cold roast beef, and put them into a frying-pan with some butter and six onions, turn the pan frequently, then mix a little broth, add pepper and salt, and after a few boils serve up hot. This dish is excellent and economical.

(*d*) To Dress the Inside of a Cold Sirloin of Beef.—Cut out all the meat, and a little fat, in pieces as thick as the finger, and two inches long; dredge it with flour, and fry in butter, of a nice brown; drain the butter from the meat, and toss it up in a rich gravy, seasoned with pepper, salt, anchovy, and shalot. Do not let it boil on any account. Before serving, add two spoonfuls of vinegar. Garnish with crimped parsley.

(*e*) Fricassee of Cold Roast Beef.—Cut the beef into very thin slices, shred a handful of parsley very small, cut an onion into quarters, and put all together in a stewpan, with a piece of butter and some strong broth; season with salt and pepper, and simmer very gently a quarter of an hour; then mix into it the yolks of two eggs, a glass of port wine, and a spoonful of vinegar; stir it quickly, rub the dish with shalot, and turn the fricassee into it.

(*f*) Beef Olives.—Cut slices half an inch thick, and four inches square; lay on them a forcemeat of crumbs of bread, shalot, a little suet or fat, pepper, and salt. Roll them, and fasten with a small skewer; put them into a stewpan with some gravy made of the beef bones, or the gravy of the meat, and a spoonful or two of water, and stew them till tender. Fresh meat will do.

(*g*) Beef Cakes, for a Side Dish, of Dressed Meat.—Pound some beef that is under-done with a little fat bacon or ham; season with pepper, salt, and a little shalot or garlic; mix them well, and make into small cakes three inches long, and half as wide and thick; fry them a light brown, and serve them in a good thick gravy.

(*h*) To Dress the Same, called Sanders. Mince beef, or mutton, small, with onion, pepper, and salt; add a little gravy; put it into scallop shells or saucers, making them three parts full, and fill them up with potatoes, mashed with a little cream; put a bit of butter on the top, and brown them in an oven, or before the fire, or with a salamander.

(*i*) To Dress the Same, called Cecils.—Mince any kind of meat, crumbs of bread, a good deal of onion, some anchovies, lemon-peel, salt, nutmeg, chopped parsley, pepper, and a bit of butter warm, and mix these over a fire for a few minutes; when cool enough, make them up into balls of the size and shape of a turkey's egg, with an egg; sprinkle them with fine crumbs, and then fry them of a yellow brown, and serve with gravy as before directed for beef-olives.

(*j*) A Corner Dish of Minced Meat.—Take a piece of the crumb of bread cut it into rounds about three inches high; take out the centre; fry them in butter, and fill them with minced meat (*a*).

(*k*) For a Side Dish.—A buttered toast, with cooked ham or beef scraped upon it and fried or browned before the fire. This toast, with ham, is excellent for breakfast or supper.

(*l*) Bubble and Squeak.—Boil and strain, then chop and fry, some cabbage, with a little butter or dripping, pepper and salt, and lay on it slices of under-done beef, lightly fried, and seasoned with pepper and salt.

(*m*) Meat Balls.—Chop the meat as fine as for sausages; then mix a small quantity of crumbs of bread, mace, pepper, cloves, and salt, all pounded well, and mix them with one egg, making them up into balls the size of a goose's egg. They should be rolled in crumbs of bread and egg, and fried; dish them up with gravy, flavoured with walnut ketchup.

(*n*) Mutton en Masquerade.—Take a shoulder of mutton, and let it be half-roasted, then cut the skin off and mince the meat with a good gravy. Season it, and put it back upon the bone. Cover with crumbs of bread, and brown it over. Oysters, or any other flavouring material, may be added; and the mince may be made of the underside of the shoulder, if the joint has been roasted and sent to table previously.

(*o*) Beef or Mutton Scalloped.—Chop some mutton or beef very fine, adding some good broth or gravy, with some walnut ketchup and a little Worcestershire sauce poured upon it, and pepper, salt, and chopped pickle mixed with the meat. Put it in scallop shells; then grate some bread, and strew thickly over it. Brown it nicely, and serve quite hot. Mutton is the best meat for the purpose, and must be *well moistened* with the broth.

(*p*) Cold Beef or Mutton may be stewed with peas. The directions are as follows:—Shell three-quarters of a peck of green peas, not very young, and put them in a stewpan with the heart of a lettuce cut in pieces and an onion sliced. Simmer in half a pint of broth for an hour and a half; cut the beef in slices, sprinkle each side with pepper and salt and put them in the stewpan. Simmer another hour and a half, then stir in a little Worcestershire sauce, and add flour and butter, with a little flour of mustard, to thicken it. Give one boil up, and serve. This would be even better with uncooked meat, in which case it must be put on with the vegetables. A turnip previously boiled in the broth would improve its flavour.

(*p*) To Pot Beef or Mutton.—Take two

pounds of lean beef, rub it with saltpetre, and let it lie one night; then salt with common salt, and cover it with water four days in a small pan. Dry it with a cloth, and season with black pepper; lay it in as small a pan as will hold it, cover it with coarse paste, and bake it five hours in a very cool oven. Put no liquor in. When cold, pick out the strings and fat; beat the meat very fine, with a quarter of a pound of fine butter, just warm but not oiled, and as much of the gravy as will make it into a paste. Put into very small pots, and cover with melted butter.

Another.—Take beef that has been dressed, either boiled or roasted; beat it in a mortar, with some pepper, salt, one blade of mace to each pot, some grated nutmeg, and a little fine butter, just warm. The flavour of this is equal to the above, but the colour is not so fine. It is a good way for using the remains of a large joint.

1637. RECEIPTS FOR DRESSING UP THE REMAINS OF VEAL AND FOWL:—

(*a*) MIROTON OF VEAL.—Mince some cold boiled or roasted veal with a third part of ham, bacon, or tongue; add to these a fifth part of bread-crumb soaked in milk, and an egg or two well beaten; season with pepper and salt and a chopped onion browned in the frying-pan; stew all these together, then butter a mould adapted to the quantity made, put it in while hot, and bake in an oven till the surface is brown; then turn out of the mould, and serve with the gravy (see (*d*), par. 1598).

(*b*) MINCED VEAL.—Cut cold veal as fine as possible, but do not chop it; put to it a very little lemon peel shred, two grates of nutmeg, some salt, and four or five spoonfuls of either weak broth, milk, or water; simmer these gently with the meat, but take care not to let it boil, and add a bit of butter rubbed in flour. Put sippets of thin toasted bread, cut into a three-cornered shape round the dish. *Or*, mince as above, and serve with rolled bacon toasted before the fire, and one or two poached eggs arranged on the surface.

(*c*) VEAL CAKE.—Take the best end of a breast of veal, bone it and cut it into small pieces; boil six eggs hard, divide the yolks, and cut the whites into pieces; take two anchovies, some parsley chopped fine, ham rather lean cut in thin slices, season these well with Cayenne, black pepper, salt, and nutmeg; put a layer of veal, parsley, ham, &c., till the deep dish is full; pour a cup of water over it and the bones at the top; cover it close down, and bake it in a slow oven for four hours; take the bones off when it comes out, and turn it out when cold.

Another.—Take the thick part of a leg of veal, free from skin and sinews, some good fresh suet or marrow, with a little bit of clear fat bacon. Beat it in a marble mortar till it comes to a paste. Season with white pepper, Cayenne, salt, nutmeg, and mace, and, if it is liked, with a little lemon peel. Make it up in cakes about the size of a biscuit; fry them in clear dripping till they become of a nice light brown. Serve them up with white sauce, which must not be put over them. This makes a pretty corner dish, or for first or second course for a small party.

(*d*) VEAL BALLS.—Two ounces of beef suet, two ounces of veal, the yolks of one raw and one boiled egg, one small onion, pepper, salt, mace, nutmeg, and lemon-peel to the taste. Beat them all well together, fry, and serve in gravy.

(*e*) VEAL OLIVES.—Take eight or ten cutlets; wash them over with batter of eggs; then season, and lay over them a little forcemeat, roll them up, and tie them with thread, which is to be removed before serving, and fry them; then put them in a stewpan with some good gravy, an anchovy, pepper, and mace; make some balls, boil them a little, and put them in; thicken with flour and butter.

(*f*) RISSOLES.—Take out the inside of small rolls; take mutton or chicken—if the former, moisten with gravy or stock; if the latter, with white sauce. The meat must be cut as for patties; season to the taste; fill the inside with the meat, then put the little bit you cut off the top of the roll on again; tie it round with thread. Beat up an egg with a little cream, and dip them in; strew with fine bread crumbs, and salamander them all over, or else fry them in butter; garnish with a little fried parsley.

(*g*) CALF'S HEAD HASHED WHITE.—Let the head be well washed, and then boil it in soft water. Take the meat from the bones and cut it into thin collops, then take of the water it was boiled in enough to stew it till the meat is thoroughly hot. Work half a pound of butter well with some flour, and mix with it a little essence of anchovies, three blades of mace, a little nutmeg, with pepper and salt. Put this to the collops, and mix it well together. Take the yolk of an egg, well beaten, and stir it up with half a pint of cream, then add it to the hash. When done, squeeze in the juice of a lemon, and garnish with balls of forcemeat and egg balls.

(*h*) TO HASH CALF'S HEAD BROWN.—From a head half boiled cut off the meat in slices, half an inch thick, and two or three inches long. Brown some butter, flour, and sliced onions, and throw in the slices with some good gravy, truffles, and morels; give it one boil, skim it well, and set it in a moderate heat to simmer till very tender.

Season with pepper, salt, and Cayenne, at first; and ten minutes before serving throw in some shred parsley, and a very small bit of tarragon and knotted marjoram cut as fine as possible. Just before serving add the squeeze of a lemon, and a table-spoonful of ketchup, and if liked a glass of white wine. Forcemeat balls and bits of bacon rolled round.

(*i*) Calf's Head Jelly, or Chicken, or Veal.—Put to a head, nicely soaked, as much water as will cover it, with salt, herbs, vegetables, horseradish, celery, and black peppercorns, sufficient to make it savoury. Let it simmer until quite tender, take out the head, remove the bones, and return them to the stewpan, with any part you like to cut off. Let the jelly boil until stiff. Strain, and let it stand till next day. Take off the fat and sediment, and melt the clear part, adding a glass of sherry. Cut the meat in small pieces, with some ham or tongue. Season with powdered mace, Cayenne pepper, and salt. Place slices of hard-boiled eggs round a pie-dish or mould, lay in the meat as lightly as possible, adding the jelly, a little warm, by degrees, until the dish is full. Let it stand until set, then turn it out, and garnish with lemon.

(*j*) Scallops of Cold Veal or Chicken. Mince the meat extremely small; and set it over the fire with a scrape of nutmeg, a little pepper and salt, and a little cream, for a few minutes; then put it into the scallop-shells, and fill them with crumbs of bread, over which put some bits of butter, and brown them before the fire. Either veal or chicken looks and eats well prepared in this way, and lightly covered with crumbs of bread fried; or these may be put on in little heaps.

(*k*) To Pot Veal.—Cold fillet makes the finest potted veal; or it may be done as follows:—Season a large slice of the fillet before it is dressed with some mace, peppercorns, and two or three cloves; lay it close into a potting-pan that will but just hold it, fill it up with water, and bake it three hours; then pound it quite small in a mortar, and add salt to taste; put a little gravy that was baked to it in pounding, if to be eaten soon; otherwise only a little butter just melted. When done, cover it over with butter.

(*l*) To Pot Veal or Chicken with Ham. Pound some cold veal or white of chicken, season as directed in the last article, and put layers of it with layers of ham pounded, or rather shred; press each down, and cover with butter.

(*m*) To Fricassee Chickens.—Mix together a cupful of cream, some mace beat fine, essence of anchovy, lemon-peel and juice or pickle, and salt to the taste. Let these simmer on the fire for an hour, then thicken it with flour and butter; have ready the chickens nearly done enough to eat, skin them, leave out the drum-sticks, liver, and gizzard, then put the chicken into the sauce, and make it thoroughly hot. To garnish the fricassee, make very small forcemeat balls of veal or pork, a little grated bread, chopped parsley, suet, nutmeg, pepper, salt, and lemon-peel, mixed up with an egg, and boiled half an hour in milk and water. For family use, milk may be in part, or wholly, substituted for the cream; and chicken which has previously appeared at table is excellent cooked in this way.

(*n*) Veal Cutlets are much better when made from a cooked fillet of veal than from raw meat.

(*o*) Cold Boiled or Roast Chickens may be skinned and made into a pie, adding plenty of good stock or gravy, with eggs and flour.

(*p*) To Devil Chicken.—Take the pinions, rump, thighs, and gizzard; strew over them half a tea-spoonful of Cayenne pepper, and a spoonful of salt; put a lump of butter in a saucepan, add a small tea-spoonful of mustard, a dessert-spoonful of mushroom ketchup or soy, and the same quantity of walnut liquor. Make this sauce hot, well broil the chicken, and lay it in. Squeeze some lemon juice over it.

(*q*) Another Devil (*hotter*).—Mix together lemon juice, grated lemon peel, salt, mustard, Cayenne pepper, port-wine, Harvey's sauce, King of Oude's sauce (or indeed any other except anchovy), at discretion. Cut slices of cold meat or fowl, butter them well, and put them to soak in the mixture. If any sauce or gravy is left from the meat employed, it will improve the devil. When required, warm it altogether in a saucepan, and serve it up exceedingly hot.

1638. Remains of Pork:—

(*a*) Cold Roast or Boiled Pork is very good warmed up with fried cabbage, like bubble and squeak. (See (*l*), par. 1636.)

(*b*) Hashed Pork.—Cut into thin slices, and season with pepper and salt; then flour over all, and put into a stewpan, with a gravy composed of a little broth, or even water will do seasoned with a spoonful of vinegar, a chopped onion, a leaf or two of sage, and a blade of mace; boil the vinegar, onion, broth, and spices together, then strain, and add the slices for a few minutes; and when warm through serve. *Or*, prepare as above, and serve with a margin of peas-pudding warmed up and laid round the dish.

(*c*) Cold Pork may be devilled according to the receipt given for chicken at (*p*).

in last paragraph, of course dispensing with the liver and gizzard.

(*d*) Slices of Cold Pork are also very good sprinkled over with powdered sage leaves, and broiled.

1639. Various Entrees, or Corner Dishes:—

(*a*) Bird's Nest.—Eggs boiled hard, and each surrounded with forcemeat; after which it is fried or browned in some way, and nicely cut in half and laid in the dish with gravy.

(*b*) Beef, Pork, or Veal Raised Pies, made about the size of a teacup.

(*c*) Potato Pie.—Mashed potatoes raised to a pie, scalloped at the top, brushed over with yolk of egg and browned, filled with veal minced or cut in small slices and done white; or small potatoes scooped out of old ones and dressed with cream; or fish; or fricasseed chickens may be put in, and it will serve as a top dish.

(*d*) Spinach, with fried toast in three-cornered pieces stuck over it, and poached eggs laid upon them.

(*e*) Veal Cutlets, dressed with egg and crumbs.

(*f*) Mutton Steaks, with the bones shortened and the fat taken off, may be arranged over a mould of mashed potatoes, or placed round the dish with tomato sauce in the centre.

(*g*) Pork Steaks, with apple sauce in the centre; or arranged round a mould of spinach, well boiled and mashed with a little butter and salt.

(*h*) Tongue, after it has been boiled, cut into thick slices, and stewed in a rich brown gravy.

(*i*) Giblets, fried with butter a light brown, and a little sliced onion with them, then stewed.

(*j*) Ox Palate, stewed, will make, if the whole, a nice top-dish; or if the half, a corner-dish.

(*k*) Calf's Head, stewed or hashed, forms a good top or corner-dish. In hashing calf's head it is an improvement to dye some of the egg balls green with spinach juice.

(*l*) Sweetbreads.—Take two large round sweetbreads, and stew them as you would veal (see page 460); then make a rich gravy with truffles, morels, mushrooms, and artichoke-bottoms, and serve it round.

Sweetbreads, Stewed White.—Carefully wash some sweetbreads, and stew them from half an hour to three-quarters in a white gravy; to which add cream, flour, butter, mace, salt, and white pepper, and a little cucumber ketchup.

Sweetbreads, Stewed Brown.—Stew as above in a brown gravy, after thoroughly scalding the sweetbreads.

Another Way.—Lard some sweetbreads, and after parboiling, cover them with egg-crumbs mixed with a little chopped parsley and marjoram, pepper and salt. Brown them in a Dutch oven, and stew them twenty minutes in a rich gravy, and flavour with ketchup.

Sweetbreads, Roasted.—Parboil two large ones; when cold, lard them with bacon, and roast them in a Dutch oven. For sauce, plain butter and mushroom-ketchup.

Sweetbread Ragout.—Cut them about the size of a walnut, wash and dry them, then fry of a fine brown; pour on them a good gravy seasoned with salt, pepper, allspice, and either mushrooms or mushroom ketchup; strain, and thicken with butter and a little flour. You may add truffles, morels, and mushrooms.

Sweetbreads Fricasseed.—Cut up the remnants of a cooked sweetbread in small portions, and prepare a sauce or gravy as in stewing either white or brown; lay the sweetbread in the pan with the gravy, and give one boil up. Garnish with slices of lemon or sippets of bread.

Lamb's Sweetbreads.—Wash and parboil them, stew as the calf's sweetbreads, with the addition of a few very young peas or French beans.

Mock Sweetbreads.—Beat three-quarters of a pound of veal well in a mortar, then put to it a little suet, or bacon, and the yolks of two eggs, with a few bread crumbs. Season it with pepper, mace, and salt; add a spoonful of cream. Make it in the shape of sweetbreads, and brown before the fire in a Dutch oven. Serve them up with a good gravy.

(*m*) A Corner or Side Dish.—Potatoes nicely mashed and shaped in a basin, or deep pie-dish, turned out and covered with sausages; all the ties crossing at the top.

(*n*) Potato Balls Ragout are made by adding to one pound of potatoes a quarter of a pound of grated ham, some sweet herbs, chopped parsley, an onion or shalot, salt, pepper, a little grated nutmeg or other spice, with the yolk of a couple of eggs; fry them in clear dripping, or brown them in a Dutch oven.

(*o*) A Pretty Corner Dish of Forcemeat.—Take four large eggs, boil and peel them; make a rich forcemeat, covering them well with it moderately thick; fry them of a fine brown, and serve them up with a rich brown gravy.

(*p*) Chicken Curry.—Cut up the chicken raw, slice onions, and fry both in butter with great care, of a fine light brown; or, if you use chickens that have been dressed, fry only the onions. Lay the joints, cut into two or three pieces each, into a stewpan, with a veal or mutton gravy, and a clove or two of garlic. Simmer till the chicken is quite tender. Half an hour before serving it, rub smooth a spoonful or two of curry-powder, a spoonful of flour, and an ounce of butter; and add this, with four large spoonfuls of cream, to the stew. Salt to the taste. When serving, squeeze in a little lemon. Slices of under-done veal, or rabbit, turkey, &c., make excellent curry. Rice boiled dry must be served round the curry. For directions to do this, see page 400.

Another, more easily made.—Cut up a chicken or young rabbit; if chicken, take off the skin. Roll each piece in a mixture of a large spoonful of flour, and half an ounce of curry-powder. Slice two or three onions, and fry them in butter, of a light brown; then add the meat, and fry all together till the meat begins to brown. Put it all into a stewpan, and pour boiling water enough just to cover it. Simmer very gently two or three hours. If too thick, put more water half an hour before serving. If the meat has been dressed before, a little broth will be better than water; but the curry is richer when made of fresh meat.

Another.—Take two large spoonfuls of curry-powder, mix it with a teacupful of water, half a teacupful of vinegar, and a dessert-spoonful of salt. Stew slowly for an hour, and when it becomes too thick add a little more vinegar and water. About three-quarters of an hour before dinner, put in the fowl, veal, mutton, or fish, cut into square-sized pieces, and previously fried of a pale brown, with six large onions sliced thin. Then stew the whole together till the meat becomes quite tender.

A MADRAS CURRY.—Take three large onions, slice and fry them in butter; then fry the fowl, meat, or lobster in the same pan, first taking out the onions; stir into it one pint of good gravy, well seasoned, two large spoonfuls of curry-powder and a little salt, add it to the meat, and stew gently an hour and a half; when nearly done add the juice of a lemon, and serve it up with boiled rice. (See page 400).

(*q*) PILLAU.—Boil a large fowl in three pints of water until it is done; wash one pound of rice three or four times, strain it till quite dry, then fry it in half a pound of butter till almost brown; throw in the fowl, add one table-spoonful of cloves whole, a little salt, two or three bay-leaves, and some mace; let them all boil together till the water is dried up; take out the fowl and rice, and when dished fry some onions brown, and strew over the pillau. Garnish with hard-boiled eggs.

(*r*) MARSDEN, OR VEAL CAKE.—Take a pie-dish and butter it; cut hard-boiled eggs into slices, and lay them round the sides of the dish and at the bottom, then slices of cold veal, ham, and pickles; season it well, and pour over it all some good rich gravy; then place layer after layer as at the beginning, filling it up with good gravy; when quite full, bake twenty minutes. Turn out when cold.

(*s*) LOBSTER RISSOLES.—Extract the meat of a boiled lobster, mince it fine as possible, and mix with it the coral pounded smooth, and some yolks of hard-boiled eggs pounded also. Season it with Cayenne pepper, powdered mace, and a very little salt. Make a batter of beaten egg, milk, and flour. To each egg allow two large table-spoonfuls of milk, and a large tea-spoonful of flour. Beat the batter well, and then mix the lobster with it gradually, till it is stiff enough to make into oval balls, about the size of a large plum. Fry them in the best salad oil, and serve them up either warm or cold.

(*t*) MACARONI.—SIDE OR CORNER DISH.—If for a corner, take a quarter of a pound of macaroni, scald it till tender, but not to break or stick together. When scalded, cut it in pieces one-third of an inch in length, and a perfect pipe; then make a brown mince of every kind of meat, game, and poultry, you happen to have cooked, with a little fat and lean of ham or bacon. Add a small piece of onion, finely chopped, pepper, salt, a little Cayenne, of ketchup and Worcestershire sauce about a tea-spoonful of each, and a small quantity of gravy to moisten it. Butter the basin thickly, and stick the macaroni closely into it, so as to give the appearance of a honeycomb when turned out, and fill up with the mince-meat, laying the rest of the macaroni at the top. Boil an hour, if a large basin, having tied a pudding-cloth tightly over it, and take it out of the water five minutes before turning it out of the basin. Serve with a tureen of gravy, putting a very little in the dish.

Another.—Boil it about an hour and a half till tender, strain the water from it, and put it back into the saucepan. Add a little pepper, salt, and a very little Cayenne, a small bit of butter, and a little cream; put it on a dish with some cheese cut thin, leave it before the fire a few minutes; or, when you have made the macaroni quite ready and hot, stir some grated cheese into it, and send it to table.

(*u*) VEAL AND HAM MACARONI, OR RICHLIEU.—Boil three ounces of macaroni tender, beat up two eggs, then fill up a pint basin, or melon-shaped mould, with nicely-flavoured minced veal and ham, a little grated lemon peel; mix well, and boil five minutes. Serve with good gravy in the dish.

(v) **Timballis Macaroni.**—Boil the macaroni in water, and an ounce of butter. When it has boiled a few moments, strain it off and return it into the pan. Add half a pint of stock; boil it slowly on a stove, till reduced; then prepare a fricassee of chicken, put the macaroni to it, with a little grated parmesan, make all hot, then set it to cool. Butter a mould well, sprinkle it with bread crumbs, and line it with half puff paste; put in the chicken quite cold; cover, and bake it in a slow oven. When done, turn it out of the mould; cut off the top, and pour over some white sauce, and some in the dish.

(w) **Tete a la Mode.**—Take an ox-cheek nicely washed, season it well with pepper, salt, mace, and cloves, and some chopped onion rubbed well over it; put it in a stewpan, with as much water as will cover it; stew it two hours, and when cold skim the fat off. Have ready a cow-heel, well cleaned and boiled tender; cut the head and foot in square bits the size of sugar-lumps, place them in layers in an earthen pan; season between each layer with pepper, salt, and mace; fill the pan with gravy, cover it with a plate, and bake it two hours in a slow oven. It is to be eaten cold.

(x) **Carrole of Rice.**—Take some well-picked rice, wash it well, and boil it five minutes in water, strain it, and put it into a stewpan, with a bit of butter, a good slice of ham, and an onion. Stew it over a very gentle fire till tender, have ready a mould lined with very thin slices of bacon, mix the yolks of two or three eggs with the rice, and then line the bacon with it about half an inch thick. Put into it a ragout of chicken, rabbit, veal, or of anything else. Fill up the mould, and cover it close with rice. Bake it in a quick oven an hour, turn it over, and send it to table in a good gravy or curry sauce.

(y) **Salmagundy** is a beautiful small dish, if in nice shape, and if the colours of the ingredients are varied. For this purpose chop separately the white parts of cold chicken or veal, yolks of eggs boiled hard, the whites of eggs, parsley, half a dozen anchovies, beet-root, red pickled cabbage, ham and grated tongue, or any thing well flavoured, and of a good colour. Some people like a small proportion of onion, but it may be better left out. A saucer, large teacup, or any other base, must be put into a small dish; then make rows round it wide at bottom, and growing smaller towards the top, choosing such of the ingredients for each row as will most vary the colours. At the top a little sprig of curled parsley may be stuck in. Or, without any thing on the dish, the salmagundy may be laid in rows, or put into the half-whites of eggs, which may be made to stand upright by cutting off a bit at the round end. In the latter case, each half egg has but one ingredient. Curled parsley and butter may be put as garnish between.

(z) **Savoury Omelet.**—Make a batter of eggs and milk and a very little flour; put to it chopped parsley, green onions, or chives (the latter are best), or a very small quantity of shalot, a little pepper, salt, and a scrape or two of nutmeg. Make some butter, boil in a small fryingpan, and pour the above batter into it; when one side is of a fine yellow-brown, turn it and do the other. Double it when served. Some scraped lean ham, or grated tongue, put in at first, is a very pleasant addition. Four eggs will make a pretty-sized omelet; but many cooks will use eight or ten. A small proportion of flour should be used. If the taste be approved, a *little* tarragon gives a fine flavour. A good deal of parsley should be used.

Another.—Let eight eggs be well beaten, leaving out two whites; add half a pint of cream, half a pound of melted butter, with some parsley and onions shred fine, a little pepper and salt; this mixture is to be fried in a pan, first browning a good piece of butter in it. Pour some gravy over it.

(a a) **Ramakins.**—Scrape a quarter of a pound each of Cheshire and Gloucester cheese, and good fresh butter; beat all in a mortar with the yolks of four eggs, and the inside of a small French roll boiled in cream till soft; mix the paste with the whites of the eggs previously beaten, and put into small paper pans made rather long than square, and bake in a Dutch oven till of a fine brown. They should be eaten quite hot. Some like the addition of a glass of white wine. The batter for ramakins is equally good over macaroni when boiled tender; or on stewed brocoli, celery, or cauliflower; a little of the gravy they have been stewed in being put in the dish.

(b b) **Fondu of Cheese.**—Grate half a pound of parmesan or any mild cheese, put in a stewpan, with two ounces of butter, set it over the stove, and keep stirring till quite melted, then take it off the stove, and mix it thoroughly with six yolks of eggs and a little cream, after which fill some small papers half full, and then bake them.

Another.—To a pint of cream put half a pound of grated cheese, and the yolks of four eggs; mix and beat all well together. Then whip the whites of the eggs to a strong froth, and mix them well with the cream, &c.; put the mixture in small paper trays, for a silver dish, and bake it in a slow oven.

1640. Potted Meats and Game used as Side Dishes :—

(*a*) Tongue is potted exactly like beef.

(*b*) Hare is potted also in the same way, removing the meat from the bones after roasting it, and mixing up the forcemeat with it.

(*c*) To Pot Pigeons.—Let them be quite fresh, clean them carefully, and season with salt and pepper; lay them close in a small deep pan, for the smaller the surface and the closer they are packed the less butter will be wanted; cover them with butter, then with very thick paper tied down, and bake them; when cold, put them dry into pots that will hold two or three in each, and pour butter over them, using that which was baked as part. Observe that the butter should be pretty thick if they are to be kept. If pigeons are boned, and then put in an oval form into the pot, they will lie closer, and require less butter. They may be stuffed with a fine forcemeat made with veal and bacon.

(*d*) To Pot Partridge.—Clean them nicely, and season with mace, allspice, white pepper, and salt, in fine powder; rub every part well, then lay the breasts downwards in a pan, and pack the birds as close as you possibly can; put a good deal of butter on them, then cover the pan with a coarse flour-paste, and a paper over, tie it close, and bake. When cold, put the birds into pots, and cover them with butter.

(*e*) A Very Cheap Way of Potting Birds.—Prepare them as directed in the last receipt; and when baked and grown cold, cut them into proper pieces for helping, pack them close in a large potting-pot, and, if possible, leave no spaces to receive the butter. Cover them with butter, and one-third part less will be wanted than when the birds are done whole. The butter that has covered potted things will serve for basting, or for paste for meat pies.

1641. To Cut Sandwiches.—Butter a two pound loaf, not too stale, and divided smoothly, then cut a thin slice, and lay on it either thin slices of meat, or some of the potted meat just given. If beef or ham is used, a little mustard is usually added. After this, place on the top another slice of bread, similarly buttered, cut off the crust all round, so as to make an oblong square, and divide this into five or six sandwiches, which should be kept moist between two plates, or in a proper sandwich-box. Any number may be cut and added, by placing one layer above the other. *Or*, use potted meat, such as beef, veal, chicken, ham, or tongue, spread on the bread cut as above. This method is far better than the slices, as there is less difficulty in dividing them with the teeth.

CHAP. XII.

PASTRY AND SAVOURY PUDDINGS.

Sect. 1.—General Remarks.

1642. Under the term pastry are comprehended all savoury pies, pasties, or patties, together with fruit and other sweet pies and tarts; in fact, everything which is confined by a paste made with flour and water, mixed also with some kind of fatty matter, such as butter, lard, suet, or dripping. For most purposes it is allowed by all cooks that butter is the best; but as it is far the dearest, it is right in economical families to substitute lard or dripping for it, when it is possible to do so without an entire sacrifice of all the benefit afforded by the material for which they are substituted. It will, however, be found that for many purposes they may be used without disadvantage; and as this is the case, receipts in which they are introduced will be found given in the following section; they will be recommended for use where practicable in the subsequent list of savoury pies, tarts, &c.

1643. The Utensils are only a pasteboard, rolling-pin, baking-tins or dishes, and ornamental cutters of various kinds.

Sect. 2.—Receipts for Making Pastry.

1644. Remarks.—These receipts are collected together under this head so that afterwards they may be referred to. Some of them are generally applicable, while others are only suited to one or two kinds of dishes. In all sorts of pastry it must be recollected that the *handling* is of the greatest importance, and that however completely the proportions may be attended to, if the hand is heavy when it ought to be light, or if rolling is neglected when it is recommended, or *vice versâ*, the cook cannot expect her paste to succeed. Beyond this, the temperature of the oven is next in importance; but this the cook is more likely to attend to than the precaution relative to the use of her hands, as its effects are more immediately apparent.

1645. RECEIPTS FOR THE VARIOUS KINDS OF PASTRY.—Of these, barm crust is the plainest kind of crust, and the most easily made; but it is not very generally approved of in flavour.

(*a*) TO MAKE BARM CRUST VERY PLAIN. Mix together one pound of flour, a quarter of a pound of butter or lard, one table-spoonful of barm, and a little salt, with milk enough to make a paste. Let it stand in a moderately warm place till it rises, then roll and use as a crust, baking as quickly after as possible.

Another Barm Crust (*sufficient for three tarts*).—Take one pound of flour, three ounces of butter (or an ounce and a half of clarified dripping, and an ounce and a half of lard), the white and yolk of an egg well beaten, and one table-spoonful of yeast. Warm the butter in half a pint of new milk, let it stand till only lukewarm; mix all up together, and let the leaven stand to rise. Then roll the paste, cover the pies, and put them into the oven directly. (If you suspect the barm to be bitter, blow the ashes off a red hot coal and put it in.)

1646. RECEIPTS FOR SHORT CRUST, PUFF PASTE, &C.:—

SHORT CRUST should be made by weighing the proper quantity of flour and putting it into a basin, first taking *from the weight* sufficient to fill the flour-dredge one-third full, then add to it *all* the dripping, lard, or butter which is to be used, and work it very lightly between the thumb and fingers till it is well mixed with the flour, and has the appearance of coarse meal. This mixing must be done very lightly, or the paste will be spoiled; then add water or milk just sufficient to form it into a paste, and with the hands take it out of the basin, first dredging a little flour on the board, then work it a little with the *fingers*, not the *heels* of the hands, roll it out three times lightly, and put it on the tart.

(*a*) AN ECONOMICAL SHORT CRUST FOR COMMON PURPOSES.—Weigh one pound of flour, and half a pound of mixed dripping and lard, or all dripping will do, mix them together with the fingers while dry, as described above, or if the cook has a hot hand, mix it with a spoon or fork; then add just water enough to wet it and make a paste; roll it out three times. After covering the dish, wet the paste with milk, or the white of an egg, and sift crystallized or "crushed lump" sugar over it. This receipt answers very well for meat-pies without the sugar, and with a little salt mixed with the flour

A similar crust may be made from beef-suet, either melted or chopped very fine.

(*b*) PLAIN SHORT CRUST MADE WITH BUTTER.—Put two ounces of butter into two spoonfuls of water, and melt it in a saucepan. Take half a pound of flour and heat it in the oven; when hot, mix it with two ounces of cold butter with the knife, then pour the melted butter into the middle, and stir it all together; roll it out once, put it over the fruit, and bake it immediately. Two lumps of sugar can be added to the flour.

(*c*) RICH SHORT CRUST.—To half a pound of flour put not quite half a pound of butter. two ounces of finely-sifted sugar, and the yolk of an egg beat up with a table-spoonful of water. The butter, sugar, and flour to be well mixed before the fire, then add the egg and water.

(*d*) SWEET AND CRISP TART PASTE.—One pound and a quarter of flour, ten ounces of fresh butter, two yolks of eggs beaten, and three ounces of sifted loaf sugar. Mix up well together with half a pint of new milk, and knead it lightly.

(*e*) CRISP SHORT CRUST FOR TARTS.—One pound of fine flour and one ounce of sifted loaf sugar, mix into a stiff paste with two ounces of butter melted in a teacupful of boiling cream. Work it well, and roll it out. Glaze the tarts with white of egg and lump sugar.

1647. TO MAKE PUFF PASTE, the room in which it is made should be cool, and the butter should be cleared of its water or milk by working it well on the slab or pasteboard with a clean knife; after which it is better to dab it with a soft cloth. When the weather is hot, put the butter in a pot, and sink it in a deep pan of water the night before it is intended to be used. Part of the butter ordered in the receipts is to be mixed with the flour when dry, as in short crust, which is then to be worked into a stiff paste with as little water as will bind it, taking care to work it *smooth* before it is rolled out. Roll it out twice, then with a knife put on the remainder of the butter in small lumps, all over it; if the weather is very hot, this must be done at twice, rolling out twice in the interval. After putting on the butter, dredge a little flour over it before folding up the paste for rolling. Great care must be taken not to handle it more than necessary, and to dredge as little flour over it as possible, at the same time if the butter comes through and sticks to the board or rolling-pin the paste will not be light. Lastly, roll it out three times, folding it very lightly in the interval between, and touching it as little as possible with the hand, and when made up set it in the oven immediately. As a consequence of this, the pastry in the baking is divided into thin laminæ or flakes—the butter having been rolled out into very thin layers between those of the paste, and partially keeping separate throughout. It is from this different management of the oily matter that puff or flaky crust differs from short crust. Either may be used indiscriminately for savoury or sweet pies, omitting the sugar for the former, and in that case substituting rather a larger allowance of salt.

1648. Receipts for Puff Paste (*sometimes called Flaky*):—

(*a*) To Make Common Puff Paste.—To one pound of flour use half a pound of butter; rub in half of it before you put in the water. Observe the above directions in making it.

(*b*) To Make Rich Puff Paste.—To one pound of fine flour rub in half a pound of butter, wet it with soft water, and roll in half a pound more of butter, according to the above directions.

(*c*) Puff Paste for Tarts.—Spread on the table two handfuls of flour, two spoonfuls of sugar, pounded, a pinch of salt, an ounce of butter, and a little water to melt the salt. Make a hole in the middle of the flour, and break into it two eggs and the yolk of another. Mix the paste well, and it will serve for making tarts, tartlets, and for mounting croquantes.

1649. Raised Crusts for Savoury Pies: Directions.—Boil water with a little fine lard, an equal quantity of fresh dripping or of butter, but not much of either. While hot, mix this with as much flour as will be wanted, making the paste as stiff as is consistent with its being smooth, which will be effected by good kneading and beating it with the rolling-pin. When quite smooth, put a lump into a cloth, or under a pan, till nearly cold. Then raise it by first making up a lump of the paste of such a size as will form what is wanted; press the knuckles of the left hand into the top of the lump near the middle, and with the right, work the edges up the back of the hand, which is to be shifted round and round until the paste assumes a circular form with upright sides and a flat bottom; and as the paste is, or should be, of a stiff consistence, it maintains this shape, if the cook takes care to avoid pressing it into holes or comparatively thin places. When thus formed the meat may be put in and covered over in the usual way.

Another.—Those who have not a good hand at raising crust may try the following method instead; roll the paste of a proper thickness, and cut out the top and bottom of the pie, then a long piece for the sides. Cement the bottom to the sides with egg, bringing the former farther out, and pinching both together; put egg between the edges of the paste, to make it adhere at the sides. Fill the pie, and put on the cover, and pinch it and the side crust together. The same mode of uniting the paste is to be observed if the sides are pressed into a tin form, in which the paste must be baked, after it shall be filled and covered; but in the latter case, the tin should be buttered, and carefully taken off when done enough; and as the form usually makes the sides of a lighter colour than is proper, the paste should be put into the oven again for a quarter of an hour. With a feather, put egg over at first.

(*a*) A Plain Crust for Pork-pies, &c.—Put one pound and a quarter of lard into a pint and a half of water, or milk; set it on the fire, and when boiling, make it into a paste with seven pounds of flour; knead well with the hands, and when the paste is thoroughly worked together make it into pies, keeping it by the fire till they are made.

Another.—To four pounds of flour put one quart of milk, with one pound and a half of lard, rub part of the lard into the flour, and melt the rest in the milk; mix it into a very stiff paste, and let it get nearly cold before raising the pies. It may not require all the milk, therefore put the lard, which rises to the top, first, and then use as much milk as is required.

Another.—Put a quarter of a pound of lard, melted in warm milk, to a pound of flour (if there is too much milk the crust falls in the oven, and is heavy, and if too little, it cracks). Knead it *well*, and keep it warm till made up. Allow a pound of flour to a pound and a half of meat.

(*b*) Raised Crusts for Custards or Fruit.—Put four ounces of butter into a saucepan with water, and when it boils, pour it into as much flour as will make a paste; knead and beat it till smooth. Raise it in the same way as described above, and if intended for custards or preserves, line it with paper till half baked, then take out the paper and pour in the custard or preserve, and bake again.

1650. Common Suet Crust for Pies or Puddings.—Mix together while dry three-quarters of a pound of beef-suet chopped fine, and a pound of flour with a little salt, then make into a stiff paste with cold water or lukewarm milk, work it well, rolling it out two or three times, and in the intervals beat it with the rolling-pin, if for pies; or omit this for puddings, as it will then be lighter.

1651. Potato Paste.—Pound some boiled potatoes very fine, and add, while warm, a sufficiency of butter to make the mash hold together, or it may be mixed with an egg; then, before it gets cold, flour the board pretty well to prevent it from sticking, and roll it to the thickness wanted. If it has become quite cold before it is put on the dish, it will be apt to crack.

1652. RICE PASTE.—FOR SWEETS.—Boil a quarter of a pound of ground rice in the smallest quantity of water; strain from it all the moisture as well as you can; beat it in a mortar with half an ounce of butter, and one egg well beaten, and it will make an excellent paste for tarts, &c.

(*a*) SAVOURY RICE PASTE.—Clean and put some rice, with an onion and a little water and milk, or milk only, into a saucepan, and simmer till it swells. Put seasoned chops into a dish, and cover it with the rice; by the addition of an egg, the rice will adhere better.

1653. ROYAL PASTE, CALLED "AU CHOUX" (*Ude*).—This paste is the basis of many sorts of pastry; it is used to mix an infinite number of second-course dishes of various forms, and of different denominations. Take a stewpan large enough to contain four quarts of water, pour half a pint of water into it, with a quarter of a pound or a little more of fresh butter, two ounces of sugar, a little salt, and the peel of a lemon; let the whole boil till the butter is entirely melted. Then take some very fine dry flour and shake through a sieve. Take the lemon peel out with a ladle, and throw a handful of flour into the preparation while boiling; taking care, however, not to put more flour than the liquor can soak up. Stir with a wooden-spoon till the paste can easily be detached from the stewpan, and then take it off the fire. Next break an egg into this paste, and mix it well; then break a second, which also mix; do not put more eggs than the paste can absorb, but you must be careful not to make this preparation too liquid. It is almost certain that about five or six eggs will be wanted for the above quantity; then form them *en choux*, by which is meant in the shape of a ball, an inch in circumference. As this paste swells very much, you must dress it accordingly, putting the choux on a baking-sheet, at an inch distant from each other, in order that they may undergo a greater effect in the oven. Brush them over as usual with the dorure or egg-wash, to which has been added a little milk. Put them into an oven moderately hot, but do not open the oven till they are quite baked, otherwise they would flatten, and all attempts to make them rise again would be found to be useless; next dry them. Sometimes they may be glazed; at other times they may be sent up without being glazed. To detach them from the baking-sheet, apply the sharp edge of a knife, and take them off gently. Then make a small opening on the side, into which put, with a tea-spoon, such sweetmeats as may be thought proper, and send them up dished *en buisson*.

1654. FRANGIPANE is a French paste used for tartlets or entremets. It is made by moistening two ounces of flour with a little milk, and heating the two together in a saucepan; then add three or four eggs, and stir all together till cool enough to make up with the hand.

(*a*) FRANGIPANE DE POMME-DE-TERRES.—Cook some potatoes by steam, take off the skin, beat them well in a mortar, then put them into a basin, add some eggs, a little butter, salt, rasped citron, some bitter macaroons, sugar or not according to taste, and use it as a paste to all sorts of entremets of pastry.

1655. ICING OR GLAZE FOR TARTS OR PUFFS:—

(*a*) Beat the white of an egg, mix with it three or four ounces of finely-sifted sugar till it becomes white and glutinous; then when the tarts, &c., are ready, take them out of the oven, brush them over with this glaze, and return them for a few minutes to harden, taking care that it does not become brown.

(*b*) *Or*, for common purposes, beat the yolk of an egg and some melted butter well together, wash the tarts with a feather, and sift sugar over as they are put in the oven.

(*c*) To GLAZE savoury pies and pasties, if they are required to look well, brush over the crust with the yolk of egg well beaten, before putting them into the oven.

SECT. 3.—SAVOURY PIES, PATTIES, AND VOL-AU-VENTS.

1656. GENERAL DIRECTIONS.—There are few articles of cookery more generally liked than savoury pies, if properly made; and they may be made so of a great variety of things. Some are best eaten when cold, and, in that case, there should be no suet put into any forcemeat that is used with them. If the pie is either made of meat that will take more dressing, to make it extremely tender, than the baking of the crust will allow, or if it is to be served in an earthen pie-dish, the meat, if beef, must be previously stewed.

1657. RECEIPTS FOR SAVOURY PIES:—

(*a*) BEEF, MUTTON, OR LAMB PIE.—Take three pounds of the veiny piece of beef that has fat and lean, or of the chops from a loin or neck of mutton; wash it, and season it with salt, pepper, mace, and allspice, in fine powder, rubbing them well in, adding a very little onion or shalot, chopped, and, if approved, a few pickled mushrooms. Set it by the side of a slow fire in a stewpot that will just hold it; put to it a piece of butter, about two ounces, and cover it quite close; let it just simmer in its own steam till it commences to shrink. When it is cold, add more seasoning, forcemeat, and boiled eggs; and if it is in a dish, put some gravy to it before baking; but if it is only in crust, do not put the gravy till after it is cold and in jelly. Cover with common short crust, or puff paste (see para. 1646 and 1648). Forcemeat may be put both under and over the meat, if preferred to balls.

(*b*) BEEF-STEAK PIE.—Prepare the steaks by cutting into long strips, and when seasoned as above, and rolled with fat in each, put them in a dish with paste round the edges; put a little water or gravy in the dish, and cover it with a good short crust or puff paste (see para. 1646 and 1648), which must be pressed down upon that part round the edge. A few oysters mixed with the beef are a great improvement, adding their liquor to the water or gravy.

(*c*) VEAL PIE.—Take some slices of a knuckle of veal; lay them at the bottom of a pie-dish, with alternate layers of ham or bacon; season between each layer with pepper, salt, and portions of hard-boiled eggs, cut in slices, between the meat. Fill up the dish in this way, then pour in some gravy made from the bones, with a little mushroom ketchup, and a very small quantity of Worcestershire sauce; cover with short crust, or good puff paste, and bake.

A Richer Veal Pie.—Cut steaks from a knuckle of veal; season them with pepper, salt, nutmeg, and a very little clove in powder. Slice two sweetbreads, and season them in the same manner. Lay a puff paste on the ledge of the dish; then put the meat, yolks of hard eggs, the sweetbreads, and some oysters, up to the top of the dish. Lay over the whole some very thin slices of ham, and half fill the dish with stock made from the bones; cover, and when it is taken out of the oven, pour in at the top, through a funnel, a few spoonfuls of good veal gravy, and some cream to fill up; but first boil it up with a tea-spoonful of flour.

(*d*) VEAL, OR CHICKEN, AND PARSLEY PIE. Cut some slices from the leg or neck of veal; if the leg, from about the knuckle. Season them with salt; scald some parsley that is picked from the stems, and squeeze it dry; cut it a little, and lay it at the bottom of the dish; then put the meat, and so on, in layers. Fill the dish with good stock, or gravy, seasoned, but not so high as to touch the crust. Cover it with short-crust or puff-paste (para. 1646 and 1648), and bake. Chicken may be cut up skinned, and made in the same way.

(*e*) CHICKEN, ROOK, OR RABBIT PIE.—Cut up two young fowls; season with white pepper, salt, a little mace, and nutmeg, all in the finest powder, and also a little Cayenne. Put the chicken, slices of ham, or fresh gammon of bacon, forcemeat balls, and hard eggs by turns in layers. If it is to be baked in a dish, put a little water; but none if in a raised crust. By the time it returns from the oven, have ready a gravy made of the knuckle of veal, or from a bit of the scrag with some shank-bones of mutton, seasoned with herbs, onions, mace, and white pepper; put as much gravy as will fill the pie-dish; but if made with a raised crust the gravy must be put in cold as jelly, clarifying it with the whites of two eggs, after taking away the meat, and straining it through a fine lawn sieve. When *rabbits* are used instead of chicken, the legs must be cut short, and the ribs must not go in, but will help to make the gravy. *Rooks* must be skinned and put to soak in milk, taking care to remove the liver and back. They are then treated like the chicken described above. The crust should be of puff-paste (see par. 1648).

(*f*) GREEN-GOOSE PIE.—Bone two young green-geese of a good size, but first take away every plug and singe them nicely; wash them clean, and season them high with salt, pepper, mace, and allspice; put one inside the other; and press them as close as you can, drawing the legs inwards; put a good deal of butter over them, and bake them either with or without crust; if the latter, a cover to the dish must fit close to keep in the steam. It will keep long. Put on a short crust or puff paste (see pars. 1646 and 1648).

(*g*) GIBLET PIE.—After very nicely cleaning geese or duck-giblets, stew them with a small quantity of water, onion, black pepper, and a bunch of sweet-herbs, till nearly done; let them grow cold, and if not enough to fill the dish lay a beef, veal, or two or three mutton steaks at bottom; put the liquor of the stew in the dish with the above, and cover with short crust or puff paste (see para. 1646 and 1648). When the pie is baked pour into it a large tea-cupful of cream. Sliced potatoes added to it eat extremely well, and some people add to it slices of apple.

(*h*) DUCK PIE.—Cut off the wings and neck of a duck, boil it a quarter of an hour, cut it up while hot, save the gravy that runs from it; then take the giblets, add anchovies, a little butter, a blade of mace, six black peppercorns, two onions, a bit of toasted bread, a bunch of herbs, and a little Cayenne pepper. Stew them till the butter is melted, then add half a pint of boiling water, and let them stew till the giblets are tender; then strain it, and put the giblets into the pie. Let the gravy stand till cold, skim off the fat, and put it with what runs from the duck at the bottom of the dish; then put in the duck well-seasoned with pepper and salt, and a few lumps of butter, and cover with short crust or puff paste (see pars. 1646 and 1648). If geese are used instead of ducks, they must be boiled half an hour. Cold duck will do as well, if the skin is taken off.

(*i*.) Pigeon Pie.—Rub the pigeons with pepper and salt, inside and out; in the former put a bit of butter, and, if approved, some parsley chopped with the livers, and a little of the same seasoning. Lay a beef steak at the bottom of the dish, and the birds cut in half on it; between every two, a hard egg. Put a cup of water in the dish; and if there is any ham in the house, lay a bit on each pigeon; it is a great improvement to the flavour. Season the gizzards and two joints of the wings, and put them in the centre of the pie; and over them in a hole made in the crust, three feet nicely cleaned, to show what pie it is. Cover with puff paste (see par. 1648).

(*j*) Pheasant, Partridge, or Grouse Pie in a Dish.—Pick and singe two pheasants, or four partridges or grouse; cut off the legs at the knee; season with pepper, salt, chopped parsley, thyme, and mushrooms. Lay a veal-steak and a slice of ham at the bottom of the dish; put the partridges in, and half a pint of good broth. Put puff paste on the ledge of the dish, and cover with the same; brush it over with egg, and bake an hour; or place them in a raised crust according to the directions given at par. 1649.

(*k*) To Make a Hare Pie.—Take the flesh off the bones in as large pieces as you can; fry it over a slow fire in some butter, two shalots, and a bay leaf, for ten minutes. When it is cold, line the bottom of the pie with forcemeat; season the hare with pepper and salt, lay it in the dish as close as possible, and pour over it the butter in which it was fried; cover it with thin slices of fat bacon. When baked, take off the lid and serve with or without jelly. The forcemeat is made of half a pound of lean beef, the same of suet, with shalots, a handful of bread-crumb, and three eggs to bind it, season well with pepper and salt; if the liver of the hare is good, it will add greatly to the thickness of it.

(*l*) Venison Pasty.—A shoulder boned makes a good pasty, but it must be beaten and seasoned, and the want of fat supplied by that of a fine well-hung loin of mutton, steeped twenty-four hours in equal parts of rape, vinegar, and port. The shoulder being sinewy, it will be of advantage to rub it well with sugar for two or three days; and when to be used, wipe it perfectly clean from it and the wine.

To Prepare Venison for Pasty.—Take the bones out, then season and beat the meat; lay it into a stone jar in large pieces, pour upon it some plain drawn-beef gravy, but not a strong one; lay the bones on the top, then set the jar in a *bain-marie*, or a saucepan of water over the fire, simmer three or four hours, then leave it in a cold place till next day. Remove the cake of fat, lay the meat in handsome pieces on the dish; if not sufficiently seasoned, add more pepper, salt, or pimento, as necessary. Put some of the gravy, and keep the remainder for the time of serving. If the venison be thus prepared, it will not require so much time to bake, or such a very thick crust, as is usual, and by which the under part is seldom done through. A mistake used to prevail, that venison could not be baked too much; but, as above directed, three or four hours in a slow oven will be quite sufficient to make it tender, and the flavour will be preserved. Either in a shoulder or side, the meat must be cut in pieces, and laid with fat between, that it may be proportioned to each person without breaking up the pasty to find it. Lay some pepper and salt at the bottom of the dish, and some butter; then the meat nicely packed, that it may be sufficiently done, but not lie hollow to harden at the edges. The venison bones should be boiled with some fine old mutton; of this gravy put half a pint cold into the dish, then lay butter on the venison, and cover as well as line the sides of the dish with a thick crust of puff paste, but do not put one under the meat. Keep the remainder of the gravy till the pasty comes from the oven; put it into the middle by a funnel, quite hot, and shake the dish to mix well. It should be seasoned with pepper and salt.

(*m*) Calf's Head Pie.—Well soak half a calf's head, and boil half an hour, the tongue longer; then cut the meat in pieces; stew the bones with a little mace, white pepper, or anything that will make it good without colouring the liquor; place at the bottom of the dish some parsley, ham, tongue, and pieces of boiled egg; then put some slices of the brains, which should be boiled rather hard; add salt, and about two spoonfuls of water, and cover with short crust. The liquor the bones are boiled in should be reduced till it is strong and of a nice flavour; strain it, and while the pie is hot pour as much in as the dish will hold; let it stand all night, and when wanted turn it out upside down, with parsley round.

A Plainer Calf's Head Pie.—Boil a calf's head one hour; when perfectly cold cut it in slices; have prepared some gravy, made from two pounds of beef; let it stand till cold; well mix some salt, pepper, mace, and Cayenne, then put some at the bottom of the pie-dish, then a layer of calf's head, then the cold gravy, then the spice, and so fill up the dish with alternate layers, the last at the top being the tongue sliced; then cover with a good paste.

(*n*) EEL PIE.—Cut the eels in lengths of two or three inches, season with pepper and salt, and place in the dish with some bits of butter and a little water, and cover it with puff paste.

(*o*) COD PIE.—Take a piece of the middle of a small cod, and salt it well one night. Next day wash it, and season with pepper, salt, and a very little nutmeg, mixed; place in a dish, put some butter on it, and a little good broth of any kind into the dish. Cover it with a crust; and when done, add a sauce of a spoonful of broth, a quarter of a pint of cream, a little flour and butter, a grate of lemon and nutmeg, and give it one boil. Oysters may be added.

(*p*) MACKEREL will do well treated in the same way, but do not salt them till used. Parsley, picked and put in, may be used instead of oysters.

(*q*) SOLE PIE.—Split some soles from the bones, and cut the fins close; season with a mixture of salt, pepper, a little nutmeg and pounded mace, and put them in layers, with oysters. They eat excellently. A pair of middling-sized ones will do, and half a hundred of oysters. Put in the dish the oyster-liquor, two or three spoonfuls of broth, and some butter; cover with paste. When the pie comes home, pour in a cupful of thick cream.

(*r*) SHRIMP PIE (*Excellent*).—Pick a quart of shrimps; if they are very salt, season them with only mace and a clove or two. Mince two or three anchovies; mix these with the spice, and then season the shrimps. Put some butter at the bottom of the dish, and cover the shrimps with a glass of sharp white wine. The paste must be light and thin. They do not take long baking.

(*s*) LOBSTER PIE.—Boil two lobsters (or three small), take out the tails, cut them in two, take out the gut, cut each in four pieces, and lay in a small dish, then put in the meat of the claws and that picked out of the body; pick off the furry parts from the latter, and take out the lady; beat the spawn and all the shells in a mortar, and set them on to stew with some water, two or three spoonfuls of vinegar, pepper, salt, and some pounded mace; a large piece of butter, rolled in flour, must be added when the goodness of the shells is obtained. Give a boil or two, and pour into the dish strained. Strew some crumbs, and put a paste over all. Bake slowly, but only till the paste be done.

(*t*) A REMARKABLY FINE FISH PIE.—Boil two pounds of small eels; then having cut the fins quite close, pick the flesh off, and throw the bones into the liquor, with a little mace, pepper, salt, and a slice of onion; boil till quite rich, and strain it. Make forcemeat of the flesh, an anchovy, parsley, lemon-peel, salt, pepper, and crumbs, and four ounces of butter warmed, and lay it at the bottom of the dish. Take the flesh of soles, small cod, or dressed turbot, and lay on the forcemeat, having rubbed it with salt and pepper. Pour the gravy over, cover with paste, and bake. Observe to take off the skin and fins, if cod or soles are used.

(*u*) POTATOE PIE. — Skin some potatoes, cut them into slices, and season them; also some mutton, beef, pork, or veal. Put layers of them and of the meat. Cover with short crust.

(*v*) MEDLEY PIE.—Cut slices of beef, mutton, or pork, with bacon (or use bacon alone); lay them in a dish with sliced apples and a little onion chopped placed in alternate layers with the meat. Season with pepper and salt, and add a tablespoonful of sugar; pour in a little stock, cover with short crust, and bake slowly.

1658. RAISED PIES:—

DIRECTIONS.—Raise the crust as ordered at page 501, then fill with meat according to the annexed receipts and cover; serve cold.

1659. RECEIPTS FOR RAISED PIES:—

(*a*) EXCELLENT PORK PIES, TO EAT COLD. Raise a crust according to directions given at page 501, into either a round or oval form; have ready the trimming and small bits of pork cut off when the hog is killed; and if these are not enough, take the meat off a blade-bone. Beat it well with a rolling-pin; season with the following mixture, and keep the fat and lean separate, which put in layers, or mixed, quite close up to the top; lay on the lid; cut the edge smoothly round, and pinch it; bake in a slow oven, as the meat is very solid.

Seasoning for Ten Pounds of Pork.—Three ounces of black pepper, three ounces of salt, three-quarters of a tea-spoonful of Cayenne, the same of mace, finely powdered; let it be well mixed with the meat, which should be chopped very fine. Brush the pies over with yolk of egg as a glaze.

(*b*) CHICKEN PIE is made in a raised form by preparing them as described at (*e*), par. 1657; and after taking the meat off the bones, placing it within a raised crust, with forcemeat, eggs, &c.

(c) Game Pies may be raised in the same way. A very delicious raised game pie is made of partridges, pheasants, and any other kind of game mixed; taking out the bones, and cutting up the flesh. It is then mixed with the chopped liver, and placed inside the raised crust; after which, when cold, the top is taken off, and a strong jelly made from the bones, and well spiced, then, *after getting cold*, mixed among the meat.

1660. Patties are made of rich puff paste, and baked in patty-pans, with a piece of bread inside; after which, this being removed, the proper contents are inserted, and the patty is served either hot or cold.

1661. Receipts for Patties:—

(a) Oyster Patties.—Put a fine puff-paste into small patty-pans, and cover with paste, with a bit of bread in each; and against they are baked have ready the following to fill them with, after taking out the bread:—Take off the beards of the oysters, cut the other parts into small bits, put them in a small tosser, with a grate of nutmeg, a very little white pepper and salt, a morsel of lemon-peel cut so small that you can scarcely see it, a very little cream, and a little of the oyster liquor. Simmer for a few minutes before filling; then serve.

(b) Lobster Patties.—Make them with the same seasoning as for oysters, adding a little cream, and the smallest bit of butter.

(c) Podovies, or Beef Patties.—Shred underdone dressed beef with a little fat, season with pepper, salt, and a little shalot or onion. Make a plain paste, roll it thin, and cut it in shape like an apple-puff, fill it with the mince, pinch the edges, and fry them of a nice brown. The paste should be made with a small quantity of butter, egg, and milk.

(d) Veal Patties.—Mince some veal that is not quite done with a little parsley, lemon-peel, a scrape of nutmeg, and a bit of salt; add a little cream and gravy, just to moisten the meat; and if there is any ham, scrape a little, and add to it. Do not warm it till the patties are baked.

(e) Turkey Patties.—Mince some of the white part, and with grated lemon, nutmeg, salt, a very little white pepper, cream, and a very little butter warmed, fill the patties.

1662. A Vol-au-Vent is a raised pie, made with very light and rich *puff paste* (par. 1648 or 1653), instead of that used for the raised pie, or it may be considered as an enlarged and highly-ornamented patty. There is considerable art in making and baking these cases, as they are put into the oven without their contents, and then filled with them afterwards. The paste is made to line a fluted dish or tin, and baked till it is of a fine light brown; but few cooks can understand how to make it without actual demonstration. *Turbot* or *salmon*, as well as sweets, are employed for this dish, dressed up with cream, and come to table a second time even with more approbation than in their original form.

Sect. 4.—Savoury Puddings.

1663. Receipts for Savoury Puddings:—

(a) Steak or Kidney Pudding.—If kidney, split and soak it, and season it with pepper and salt, which last is all that the steak will require; make a paste of suet, flour, and milk (see par. 1650); roll it, and line a basin with some; put the kidney or steaks in, cover with paste, and pinch round the edge; tie it up in a cloth, and boil a considerable time—that is, three or four hours.

(b) Beef-steak Pudding.—Prepare some fine steaks as for beef-steak pie; roll them with fat between, and if shred onion is approved add a very little; lay a paste of suet, flour, and milk in a basin (see par. 1650), and put in the rolls of steaks; cover the basin with a paste, and pinch the edges to keep the gravy in; cover with a cloth tied close, and let the pudding boil slowly, but for a length of time—say for four hours.

(c) Baked Beef-steak Pudding (*Toad-in-a-hole*).—Make a batter of milk, two eggs, and flour; lay a little of it at the bottom of the dish; then put in the steaks prepared as above, and very well seasoned; pour the remainder of the batter over them, and bake it.

(d) Mutton Pudding.—Season with pepper, salt, and a bit of onion: lay one layer of steaks at the bottom of the dish, and pour a batter of potatoes boiled and pressed through a colander, and mixed with milk and an egg over them; then put in the rest of the steaks and batter; and bake it. Batter with flour instead of potatoes eats well, but requires more egg, without which is not so good.

Another.—Cut slices of a leg that has been underdone, and put them into a basin lined with a fine suet crust (par. 1650); season with pepper, salt, and finely-shred onion or shalot, then cover, and boil.

(e) Suet Pudding.—Shred a pound of suet; mix with a pound and a quarter of flour, two eggs beaten separately, a little salt, and as little milk as will make it; boil four hours. It eats well next day, cut in slices and broiled. The outward fat of loins or necks of mutton, finely shred, makes a more delicate pudding than suet.

(f) Lark Pudding is an old-fashioned delicacy, and made with about six larks mixed with steak (see *b*), and covered with paste as there directed.

(*g*) Potato Pudding with Meat.—Boil them till fit to mash, rub through a colander, and make into a thick batter with milk and two eggs; lay some seasoned steaks in a dish, then some batter, and over the last layer put the remainder of the batter; bake a fine brown.

(*h*) Yorkshire Pudding.—Mix five spoonfuls of flour with a quart of milk and four eggs well beaten; butter a shallow pan, and bake under the meat; when quite brown turn the other side upwards and brown that. It should be made in a square pan, and cut into pieces to come to table. It is a good plan to set it over a chafing-dish at first, and stir it some minutes.

(*i*) Peas-pudding is made as follows:—Soak split peas for twelve hours in soft water, then tie them in a cloth, but not too tightly, or they will not have room to swell; boil them from three hours and a half to four hours, then take them out and rub them through a hair sieve, adding afterwards a little butter and salt; return them to the cloth, boil again for half an hour, and serve.

Sect. 5.—Sweet Pastry.

1664. General Remarks.—Barm crust, short crust, and puff paste, are all used for these articles by some people; the first kind being employed for the sake of the stomach, the second from economical motives, when composed of dripping or lard, and the third by those who consult only their palates, without attending to the interests of their bodies or purses. Under the head of sweet pastry are included all kinds of fruits, whether fresh or preserved, which have any kind of baked crust attached to them; whereas, those which either have no crust, or when they have it are boiled instead of being baked, are usually denominated either puddings or sweets. The former definition will, therefore, comprehend all the articles included in this section. With regard to the use of lard, dripping, or butter for the paste used with them, there can be no doubt that butter, either fresh or salt, is the best for the purpose; and for puff paste is not to be superseded, except, perhaps, by a very small quantity of lard mixed with it; but for short crust, lard or dripping, or a mixture of the two, will answer well enough for many purposes—such as fruit tarts; and the crust so made is quite as wholesome and very nearly as good as when made of butter. (For icing these tarts, see page 502).

1665. Receipts for Fruit Tarts.—In using preserved fruits, it should be known that they are injured by the degree of baking required for the crust; those that have been done with their full proportion of sugar, need no baking; and the crust should be baked in a tin shape, and the fruit afterwards added; or it may be put into a small dish, or tart-pan, and the covers may then be baked on a tin cut out according to taste, and put in the fruit when ready. Bottled fruits must be treated like fresh fruit.

(*a*) Ordinary Apple Tart.—Pare, quarter, and core the apples, and fill a pie dish up; put over them a heaped tablespoonful of sugar, with a little grated lemon-peel, or two cloves, or a little nutmeg. If the apples are mellow, add a tablespoonful of water; then put on a short crust or puff-paste, and bake nearly an hour. *Or*, wipe the outside of the apples, then pare, quarter, and core them, using the peel and the cores to boil with a little water till it tastes well; strain, and add a little sugar, and a bit of bruised cinnamon or cloves, whichever is preferred, and simmer again. In the meantime, place the apples in a dish, a paste being put round the edge; when one layer is in, sprinkle on them half the sugar, and some shred lemon-peel, and squeeze in some lemon juice, or a glass of cider, if the apples have lost their freshness; then put in the rest of the apples, sugar, and the liquor that has been boiled. Cover with either of the plain pastes (see para. 1646 or 1648). Some add quince-marmalade, or orange-paste, to the apples as an improvement. Apples should never be cut smaller than in quarters, or they do not become tender in baking; nor should they be long exposed to the air after peeling, as they put on a dark colour, and the surface becomes hard.

(*b*) Codlin Tart.—Scald the codlins as is directed under that head; when ready take off the thin skin, and lay them whole in a dish; put a little of the water the apples were boiled in at bottom, strew them over with lump sugar or fine Lisbon; when cold, put any of the previously-described pastes round the edges and over the tart, or bake a crust in an empty tin or dish, and lift the lid, cut it in quarters, without touching the paste on the edge of the dish, and make the points stand up, or remove the lid altogether to introduce the fruit. Pour a good custard over it when cold, and sift sugar over. *Or*, line the bottom of a shallow dish with paste, lay the apples in it, sweeten, and lay little twists of paste over in bars.

(*c*) Mixed Apple and Orange Tart.—Pare two Seville or China oranges thin, boil the peel till tender, and shred it fine; pare, quarter, and core ten apples, put them in a stewpan, and as little water as possible; when half done, add half a pound of sugar, the orange-peel, and juice; boil till pretty thick. When cold, put it in a shallow dish, with paste round, or patty-pans lined with paste, to turn out, and be eaten cold.

(*d*) Rhubarb Tart.—Cut the stalks in lengths of one or two inches, having, if old, taken off the thin skin. Lay them in a dish, and put over a table-spoonful of sugar, then cover with short-crust or puff-paste, (see par. 1646 or 1648); and bake for half an hour to three-quarters. Some add a little grated nutmeg.

(*e*) Green Gooseberry, Green Currant, Ripe Currant, Raspberry, Raspberry and Currant, and Black Currant Tarts are all made by placing the respective fruits in a pie-dish with about two large table-spoonfuls of brown sugar to a small pie-dish, and two or three table-spoonfuls of water; then cover with any of the pastes described before, and bake.

(*f*) Green Apricot Tarts should be made by stewing the green apricots till tender, either in a jar placed in an oven or in a stewpan, with a little water and sugar, then putting in a pie-dish. Cover with paste, and bake.

(*g*) Ripe Plums of all Kinds, including greengages, egg-plums, damsons, bullaces, &c., are made into tarts just in the same way as described under (*e*).

(*h*) Raspberry Tart with Cream.—Roll out some thin puff paste, and lay it in a patty-pan of what size you choose. Put in raspberries, strew over them fine sugar, cover with a thin lid, and then bake. Cut it open, and have ready the following mixture warm:—Half a pint of cream, the yolks of two or three eggs well beaten, and a little sugar; and when this is added to the tart, return it to the oven for five or six minutes.

(*i*) Orange Tart.—Squeeze, pulp, and boil two Seville oranges till tender, weigh them, and add double the weight of sugar; beat both together to a paste, and then add the juice and pulp of the fruit, and the size of a walnut of fresh butter, and beat altogether. Choose a very shallow dish, line it with paste, fill it with the fruit and cover or cross with bars, according as it is desired to be an open or closed tart.

Another.—Line a tart-pan with thin puff paste, put into it orange-marmalade that is made with apple-jelly, and lay across it twisted bars of paste. Bake, and serve when cold.

(*j*) Blackberry and Cranberry Tarts are made as for currant (see *e*); the former is much improved by the addition of half the quantity of apples, and a little cider or lemon-juice.

(*k*) Barberry Tart is excellent when made with fresh fruit, or with its preserve. For the former strip the berries from the stalks, and add half their weight of sugar, or rather more if not quite ripe, laying the sugar and fruit in alternate layers, and pouring in water, as for currants, adding any crust which may be approved of, either open or closed. When the preserved barberries are used, the crust must be first half-baked in an open form, then add the preserve, and finish the baking.

(*l*) Tartlets of any of the ordinary preserves are made in small patty-pans, of any shape, by lining them with puff-paste, and half-baking them, then filling with the preserve, and finishing the baking.

(*m*) Mince Pies are made in small patty-pans, which are lined with puff-paste, and after putting in some mince-meat, covering them over with more paste and baking.

To Make the Mince-meat.—Take three pounds of suet, finely chopped and sifted, two pounds of currants, three pounds of raisins, and one pound of apples, all chopped very small, three pounds of moist sugar, three-quarters of a pint of red and white wine, mixed, a glass of brandy, the peel of two small lemons, the juice of one, two ounces of candied peel, cut; mix all together with a quarter of an ounce of cinnamon, a quarter of an ounce of mace, and one small nutmeg, all finely powdered. Keep it in a close covered jar, and if kept a twelvemonth, it may require the addition of a little more wine.

Another Receipt.—Take two pounds of suet, chopped very fine and sifted, two pounds of currants, one pound of sun raisins, two pounds of apples, half a pound of bread, one pound and a quarter of moist sugar, three-quarters of a pint of red and white wine, mixed, a glass of brandy, the peel of two small lemons, the juice of one, four ounces of candied orange-peel, cut; mix all together with cinnamon, mace, nutmeg, and salt, to the taste. If preferred, leave out two ounces of bread and put in two biscuits.

(*n*) Lemon Mince Pies.—Squeeze the juice of six lemons, boil the rinds, pulp, and kernels together, in three or four waters, till the bitterness is gone and they are quite tender; beat it fine in a mortar, and when cold add to it two pounds of currants, one pound of raisins stoned and chopped, two pounds of sugar, and two pounds of suet; mix all together, and pour in the lemon juice, with a glass of brandy and whatever dried fruits may be liked.

(*o*) To Make Cheesecakes.—Strain the whey from the curd of two quarts of milk; when rather dry, crumble it through a coarse sieve, and mix with six ounces of fresh butter, one ounce of pounded blanched almonds, a little orange-flower water, half a glass of raisin wine, a grated biscuit, four ounces of currants, some nutmeg, and cinnamon, in fine powder, and beat all the above with three eggs and half a pint of cream till quite light; then line the patty-pans with puff-paste and fill them three parts full.

Another (more plain, but very good).—Turn three quarts of milk to curd, break it and drain the whey; when dry, break it up in a pan, with two ounces of butter, till perfectly smooth; put to it a pint and a half of thin cream, or good milk, add sugar, cinnamon, nutmeg, four or five ounces of currants, and two table-spoonfuls of brandy.

Another.—Mix the curd of three quarts of milk, a pound of currants, twelve ounces of Lisbon sugar, a quarter of an ounce each of cinnamon and nutmeg, the peel of one lemon chopped so fine that it becomes a paste, the yolks of eight and whites of six eggs, a pint of thin scalded cream, and a glass of brandy; put a light puff paste in the patty-pans, and three parts fill them.

(*p*) Lemon Cheesecakes.—Mix four ounces of sifted lump sugar with four of butter, and gently melt them; then add the yolks of two and the white of one egg, the rinds of three lemons shred fine and the juice of one and a half, with one Savoy biscuit, some blanched almonds pounded, and three spoonfuls of brandy; mix well; put in puff-paste.

(*q*) Orange Cheesecakes.—Blanch half a pound of almonds, beat them very fine with orange-water, and mix with half a pound of fine sugar beaten and sifted, a pound of butter that has been melted carefully without oiling, and which must be nearly cold before it is used; then beat the yolks of ten and whites of four eggs; pound two candied oranges, and a fresh one with the bitterness boiled out, in a mortar till as tender as marmalade, without any lumps; and beat the whole together and put into patty-pans, lined with puff paste.

(*r*) Potato Cheesecakes.—Boil six ounces of potatoes, and four ounces of lemon peel; beat the latter in a marble mortar with four ounces of sugar; then add the potatoes, beaten, and four ounces of butter melted in a little cream. When well mixed, let it stand to grow cold. Put puff-paste in patty-pans, and rather more than half fill them. Bake in a quick oven half an hour, sifting some double-refined sugar on them when going to the oven. This quantity will make a dozen.

(*s*) Apple Cheesecakes.—Take three-quarters of a pound of apples, scald and pulp them, half a pound of lump sugar, half a pound of butter, melted, eight yolks and four whites of eggs, the grated peel and juice of two lemons; bake in patty-pans lined with a good paste.

(*t*) Almond Cheesecakes.—Take two ounces of sweet almonds, blanched and pounded, the yolks of four eggs and the whites of two, a quarter of a pound of melted butter, a quarter of a pound of sugar, a little wine and brandy, and the rind of half a lemon finely pounded. Put in patty-pans, lined with puff paste.

(*u*) Little Cockades Garnished.—Spread some puff paste about a quarter of an inch thick; cut it with a large fluted round cutter, the same as for patties; cut a hole in the middle with a small plain round cutter, then, as quickly as possible with the finger, turn the paste so as to put the inside on the baking dish, and the outside above; put them at a great distance from each other on the baking dish, as the paste spreads sideways instead of rising; bake in a hot oven, and glaze of a good colour. When done they represent the exact form of a cockade. Garnish with fillets of sweet-meat to represent the plaits of the cockade.

(*v*) Apricot Cakes Trellissed.—Spread some puff paste (trimmings will do for these cakes); spread it equally on a large buttered baking sheet with the rolling-pin. Spread some apricot marmalade over the paste equally, then cut some more paste long and narrow, roll it about the size of strong cord, and arrange it crossways like a trellis, over the marmalade; put down over the bars lightly; and lastly, bake it in a moderate oven. When done, cut them into small oblong squares, and dress them on the dish, one above the other.

1666. Receipts for Puffs.—These are usually made with puff paste (par. 1648), which is turned over upon the contents, pressed together at the edges, and baked without any tin or shape.

(*a*) Apple Puffs.—Pare the fruit, and either stew them in a *bain-marie* or in a stone jar on a hot plate, or bake them; when cold, mix the pulp of the apple with sugar and lemon-peel shred fine, taking as little of the apple-juice as possible; bake in thin paste, in a quick oven; a quarter of an hour will do when small. Orange or quince marmalade is a great improvement.

(*b*) Lemon Puffs.—Beat and sift a pound and a quarter of double-refined sugar; grate the rind of two large lemons, and mix it well with the sugar; then beat the whites of three new-laid eggs a great while, add them to the sugar and peel, and beat it for an hour; make it up in any shape you please, and bake it on paper put on tin plates, in a moderate oven. Do not remove the paper till cold. Oiling the paper will make it come off with ease.

CHAP. XIII.

PUDDINGS, PANCAKES, OMELETS, &c., WITH THEIR SAUCES.

SECT. I.—PUDDINGS AND DUMPLINGS.

1667. **PUDDINGS** may be either boiled or baked, and they are made in such a variety of ways as almost to be beyond the reach of definition. When boiled, they are generally tied up in a cloth. The outside of a boiled pudding often tastes disagreeably, from the cloth not being nicely washed, and kept in a dry place. It should be dipped in boiling water, squeezed dry, and floured when to be used. If the pudding is of bread, it should be tied loosely; if of batter, tightly over the basin. The water should boil quick when the pudding is put in; and it should be moved about for a minute, lest the ingredients should not be mixed at the moment of setting. Batter-pudding should be strained through a coarse sieve, when all is mixed; in others, the eggs are strained separately. The pans and basins must be buttered, to prevent the paste sticking to them; which is also avoided by having a pan of cold water ready, and dipping the pudding in as soon as it comes out of the pot. Very good puddings may be made *without* eggs: but they must have as little milk as will mix them, and boil three or four hours. A few spoonfuls of any kind of *bottled* malt liquor or of *fresh* small beer, or one of yeast, will answer instead of eggs. *Or, snow* is a tolerable substitute for eggs, either in puddings or pancakes. Two large spoonfuls will supply the place of one egg, and the article it is used in will be nearly equally good. This is a useful piece of information, especially as snow often falls when eggs are dearest. It may be taken up from any clean spot some hours before it is wanted, and will not lose its virtue until it melts, though the sooner it is used the better. In using eggs, the yolks and whites should be beaten separately, by which the articles they are put into are made much lighter.

1668. **PLAIN FRUIT PUDDINGS** are, most of them, made either with the suet crust (par. 1650) lining a basin and covering the fruit, which is then tied up in a cloth, or with the same crust, using butter instead of the suet, but not adding more than six ounces to the pound of flour.

1669. **RECEIPTS FOR FRUIT PUDDINGS:**—

(*a*) **APPLE PUDDING** is made by lining a basin with the above paste, and filling it with pared, quartered, and cored apples, adding two table-spoonfuls of sugar, covering it with the paste, and then boiling it from one to two hours, according to the size of the pudding and the ripeness of the apples. It is a bad plan to cut the apples up into small pieces, as the exposure to the air renders the cut surface hard and tough.

(*b*) **ALL OTHER FRESH FRUIT PUDDINGS**, such as gooseberry, currant, raspberry, &c., are made in the same way as that given for apples (see *a*).

(*c*) **BAKED APPLE PUDDING.**—Pare and quarter four large apples; boil them tender, with the rind of a lemon, in so little water that, when done, none may remain; beat them quite fine in a mortar, and add the crumb of a small roll, four ounces of butter melted, the yolks of five and whites of three eggs, juice of half a lemon, and sugar to taste; mix all together, and lay it in a dish with paste to turn out, leaving a hole at the bottom of the size of a sixpence, so that the juice may exude through it, and give a rich flavour to the paste. This makes it doubly delicious.

(*d*) **THE OTHER FRUITS** mentioned at (*b*) may be used as described at (*c*), and baked in the same way.

(*e*) **BAKED RIPE GOOSEBERRY PUDDING.**—Stew one and a half pound of ripe red gooseberries in a jar, put in the oven or a saucepan of water until they will pulp, take a pint of the juice, press it through a coarse sieve, mix it with three eggs well beaten and one ounce and a half of butter, then sweeten and bake in a dish lined with a thin paste. A few crumbs of roll or four ounces of Naples biscuits should be mixed with the above to make it firm.

(*f*) **DELICIOUS FRUIT PUDDING.**—Mix two and a half pounds of red currants and raspberries with one and a quarter pound of raw sugar, then fill a pudding-dish with sliced bread (without crust), and layers of the fruit alternately, leaving a thick layer of the fruit at the top. Bake it in the bachelor's oven for nearly an hour before it is served, and serve it in the same dish, which may be improved in appearance by a knitted cover tied over the edges.

(*g*) **RICE AND FRUIT** (*baked*).—Wash a sufficient quantity of rice; put a little water to it, and set it in the oven till it is absorbed; then put in a little milk, work it well with a spoon, set it in the oven again, and keep working it from time to time till it is sufficiently soft. A little cream worked in it at the last is an improvement. Fill a pie-dish nearly full of fruit, sweeten it, and lay on the rice unevenly by spoonfuls. Bake it till the rice is of a light brown colour.

(*h*) **RICE PUDDING WITH FRUIT.**—Swell the rice with a very little milk over the fire; then mix fruit of any kind with it (currants, gooseberries, scalded pared, and quartered apples, raisins, or black currants); with one egg in the rice to bind it; boil it well, and serve with sugar.

(*i*) **Batter Pudding with Fruit.**—This is made by mixing green gooseberries or black currants with batter, and boiling as for batter pudding (which see).

1670. **Plain Puddings:—**

(*a*) **Oatmeal Pudding.**—Pour a quart of boiling milk over a pint of the best *fine* oatmeal; let it soak all night; next day beat two eggs, and mix a little salt; butter a basin that will just hold it: cover it tight with a floured cloth, and boil it an hour and a half. Eat it with cold butter and salt. When cold, slice and toast it, and eat it as oatcake buttered.

(*b*) **Prepared Barley Pudding.**—Mix four table-spoonfuls of barley with sufficient cold milk to form a paste, pour on it one quart of scalding milk, then add a small slice of butter and four eggs well beaten, flavour with nutmeg, lemon-peel, bitter almonds, and sugar. Be careful to stir the barley well while pouring on it the boiling milk, and not to put in the eggs till the mixture is cold. The eggs must also be well mixed in. Bake one and a half hour in a slow oven.

(*c*) **Good Batter Pudding.**—To one pint of new milk add four eggs, four spoonfuls of flour, and some slices of candied peel with the sugar on it; serve with wine sauce, and bake in cups, or boil.

(*d*) **Hasty Pudding.**—Boil a pint of milk, then whilst boiling stir into it as much flour as will thicken it, generally about a table-spoonful. Serve hot with cold butter and sugar, or, if preferred, the best treacle.

(*e*) **Hasty Pudding Baked.**—Stir half a pound of flour into a pint of cold milk, and boil it, then take five eggs, and three quarters of an ounce of bitter almonds blanched and pounded, and add them to the hasty pudding when cold. Sweeten with sugar. Bake in cups, and serve with wine sauce.

(*f*) **Plain Rice Pudding.**—Wash and pick some Carolina rice; throw among it some pimento finely pounded, but not much; tie the rice in a cloth, and leave plenty of room for it to swell. Boil in it a quantity of water for an hour or two. When done, eat it with butter and sugar, or milk. Put lemon-peel, if approved. Many people prefer it without spice, and eat it with salt and butter alone.

(*g*) **Common Baked Rice Pudding.**—Put half a teacupful of rice in a dish, with a pint of skim or new milk, a little sugar, and nutmeg or lemon-peel to be added, with, if preferred, a small slice of butter, or dripping, or a few pieces of suet put on the top. Bake slowly, and stir it occasionally at first, to prevent the rice from burning to the bottom. If required to turn out, the dish must be buttered. An egg is a great improvement to this pudding; and, if it is liked in a milky condition, less rice must be used.

Another Baked Rice Pudding (*richer*). Boil about two table-spoonfuls of rice in water till just soft; then pour away the water and add a pint of new milk, a little nutmeg, lemon-peel, and sugar; then boil again, and when just off the boil, add the yolk and whites of nearly three eggs; bake and serve with sugar sifted over it.

(*h*) **A Ground Rice Pudding.**—Add to one pint of milk four eggs well beaten, and one and a half table-spoonful of ground rice; boil these together, stirring them. Pour the mixture while hot over two ounces of butter, sugar to the taste, and add the grated rind with the juice of a middle-sized lemon. Line the dish with puff paste before putting in the mixture, and bake.

A Plain Ground Rice Pudding may be made with a fourth part of the eggs and butter given above, or any other proportion of them, and without paste or lemon.

(*i*) **Tapioca Pudding.**—Soak two table-spoonfuls of tapioca in a quart of cold milk for four hours, mix with it two eggs well beaten, two ounces of sugar, and a little grated lemon-peel; let it boil, stirring it all the time, to prevent the eggs from turning the milk. Bake it in a dish for half an hour; one egg is enough for common purposes.

(*j*) **Sago Pudding.**—Put three ounces of sago to soak in cold water for half an hour, then pour off the water, and stir the sago by degrees into a pint of milk boiling hot in a saucepan; let it boil ten minutes. Stir it till quite cool. Beat an egg well, mix it with a little cold milk, one ounce of sugar, and a little grated lemon-peel. Mix all well together, and bake in a slow oven an hour and a quarter.

(*k*) **Semolina Pudding.**—Add two ounces of semolina, previously soaked in a little cold milk for half an hour, to a pint of boiling milk, in the same way as for sago pudding, and add the egg and lemon-peel also, as in that pudding (which see at *j*).

(*l*) **Arrowroot Pudding.**—Mix an ounce and a half of West Indian arrowroot with a little cold water into a thin smooth paste; while doing this, boil a pint of milk gently with a little cinnamon and sugar; when boiling, pour it into a basin through a strainer upon the arrowroot, stirring it carefully; as soon as this becomes cool, beat three eggs and add them, stirring them well in. Then boil in a basin, or bake in a dish with a crust on the edge. From half an hour to three quarters is sufficient. One egg is enough for a plain pudding.

(*m*) **Custard Pudding.**—Mix by degrees a pint of good milk with a large spoonful of flour, and some sugar to the taste; boil them together for ten minutes, then add the yolks of five eggs, and a little pounded cinnamon. Butter a basin that will exactly hold it, pour the batter in, and tie a floured cloth over. Put it in boiling-water over the fire, and turn it about for a few minutes, to prevent the eggs going to one side. Half an hour will boil it. Put currant jelly on it, and serve with sweet sauce.

Another Plainer Custard Pudding.—One pint of new milk poured boiling upon three spoonfuls of flour; beat them up together, then add three eggs, and boil an hour.

Rich Baked Custard Pudding.—Add four eggs well beaten to a quart of milk, nutmeg and sugar to taste, line the dish partly, and edge it with paste before pouring in the custard.

(*n*) **Bread-and-Butter Pudding.**—Slice bread thin, spread it with butter, cut it in rather small pieces, and lay it in a dish with currants or any preserve between the layers. Pour over it a slightly-boiled custard made of milk, with one egg, a little sugar, and lemon-peel; let it soak two hours at least before it is to be baked, and lade the custard over to soak the bread. This is very good made without either currants or preserve.

(*o*) **Boiled Bread Pudding.**—Grate white bread; pour boiling milk over it, and cover close. When soaked an hour or two, beat it fine, and mix with it two or three eggs well beaten. Put it into a basin that will just hold it; tie a floured cloth over it, and put it into boiling water. Send it up with melted butter poured over. It may be eaten with salt or sugar.

Another and Richer.—On half a pint of crumbs of bread pour half a pint of scalding milk; cover for an hour. Beat up four eggs, and, when strained, add to the bread a teaspoonful of flour, an ounce of butter, two ounces of sugar, half a pound of currants, an ounce of almonds beaten with orange-flower water, half an ounce of orange peel, and the same of lemon and citron. Butter a basin that will exactly hold it, flour the cloth, tie tight over, and boil one hour.

(*p*) **Brown Bread Pudding.**—Mix half a pound of brown bread, crumbled, with four ounces of suet, four ounces of moist sugar, four eggs, half a pound of currants, half a pint of milk, and a little brandy. It must boil an hour and a half.

(*q*) **Baked Bread Pudding, Plain but Excellent.**—Slice the bread, and pour over boiling new milk enough to cover it; let it stand together to soak twenty minutes. Then add three (or two) eggs, well beaten; a little lemon-peel, loaf sugar, and a squeeze of lemon to make it lighter. Beat for twenty minutes, or half an hour, if time allows, before baking. Sift loaf sugar over it when turned out to send to table.

(*r*) **Little Bread Puddings.**—Steep the crumbs of a penny loaf grated in about a pint of warm milk; when soaked, beat six eggs, whites and yolks, and mix with the bread, and two ounces of butter warmed, sugar, orange-flower water, a spoonful of brandy, a little nutmeg, and a teacupful of cream. Beat all well, and bake in teacups buttered. If currants are chosen, a quarter of a pound is sufficient; if not, they are good without; or you may put orange or lemon candy. Serve up with pudding-sauce.

(*s*) **Bread and Rice Pudding.**—Steep a quarter of a pound of rice in new milk till quite soft, and cover it over till cold; then soak about two ounces of white bread, drain it from the milk, and add it to the rice; beat it well with two or three eggs, a little sugar and nutmeg, and boil for an hour. *Or*, if you bake it, put a little butter or suet on the top.

(*t*) **Macaroni Pudding.**—Boil a teacupful of macaroni in a quart of milk until tender; then beat well two eggs, yolks and whites separately, stir all together, sugar and spice to the taste, and bake.

A Rich Macaroni Pudding.—A quarter of a pound of macaroni is to be boiled in a pint of milk for half an hour; then turn it into a dish, and mix with it three eggs, two table-spoonfuls of loaf sugar, a little nutmeg, and a few pounded almonds or lemon-peel; butter the mould well, and boil or steam it one hour. Serve it up with wine sauce.

(*u*) **Pembroke Pudding.**—Mix together two ounces of suet shred fine, two ounces of bread crumbs, two eggs, two spoonfuls of sugar and a pint of milk, a little flavouring of spice or lemon-peel improves it; bake it half an hour.

(*v*) **Poor Knight's Pudding.**—Cut a roll into thin slices with the crust on it, mix up two eggs with a pint of milk; sugar and nutmeg to the taste. Let the slices soak in this custard for an hour, then pour off, and drain another hour; fry them till they are of a nice brown, and serve with wine sauce.

(*w*) **St. Agnes Pudding.**—Mix together ten ounces of grated bread, half a pound of suet, half a pound of moist sugar, the rind and juice of a large lemon, and one egg. It takes a long time to mix; a little brandy is a great improvement, and a few currants may be added. Boil it nearly an hour.

(*x*) **Lemonade Pudding** (*a cool summer dish*).—Make a sufficient quantity of the lemonade in the usual way, adding the juice of a Seville orange to every pint; when cold, soak in it thoroughly a French roll or rolls, but do not break them, then stick in their surface blanched almonds, pour over them liquefied currant jelly, and serve.

(y) Rolly-polly Pudding.—This well-known pudding is made by rolling out a thin layer of suet or butter paste, as for puddings, upon which either a preserve or dried currants are spread evenly, leaving an inch bare at the edges all round, except on that next the cook, and then the whole is rolled up into a long pudding, closed at the ends by pinching the paste, and enveloped in the same way in a cloth, which is tied with a string at each end, and boiled about one hour.

(z) Children's Pudding.—Mix three-quarters of a pound of flour, a quarter of a pound of treacle, half a pound of suet, half a pound of currants, and boil three hours.

(aa) Suet Pudding, intended to be eaten with sugar or preserves, is made in the same way as for savoury dishes (see p. 506).

1671. Receipts for Richer Puddings:—

(a) Plum Pudding.—Mix together a quarter of a pound of bread-crumbs, the same of treacle, currants, and suet, and a little nutmeg. Put in a basin or shape, and boil three hours.

Common Plum Pudding.—Soak nine ounces of white bread in milk from six to twelve hours, squeeze very dry, add to it half a pound of raisins when stoned, four ounces of suet chopped fine, three eggs, three ounces of sugar, a little nutmeg; butter a mould, put it in, and boil three hours. Serve with wine sauce.

Plum Pudding without Eggs.—Mix together half a pound of bread, four ounces of suet, four ounces of treacle or sugar, a dessert-spoonful of honey-water, and half a pound of currants, with a little milk. Boil it three or four hours.

A Plain Plum Pudding.—Well mix a large breakfast-cupful of bread crumbs, the same quantity of flour, the same of finely-chopped beef suet, two eggs well beaten, a cupful of sugar, a little ginger, grated nutmeg and candied peel, a quarter of a pound of currants, half a pound of raisins, two spoonfuls of treacle made warm in a little milk. Boil it four hours.

Another Plain Plum Pudding.—Mix a pound of grated bread, half a pound of currants when cleaned, half a pound of raisins when stoned, half a pound of suet, two ounces of candied peel, four eggs, some sugar, a glass of wine or brandy, a little nutmeg, and a teacupful of milk; put it in a basin, and boil it four hours.

A Richer Plum Pudding.—Mix together one pound each of plums, currants, moist sugar, suet, and bread-crumbs, four ounces of flour, and four eggs well beaten; add mixed spice and candied peel to the taste, with a spoonful of brandy and sherry. Boil four hours.

A Rich Plum Pudding.—Mix together half a pound of grated bread, half a pound of beef suet chopped fine, half a pound of currants, half a pound of apples chopped fine, seven yolks of eggs well beaten, two or three spoonfuls of brandy and a little sherry; sugar and salt to the taste. Let it boil four hours at least. The sauce should be red wine, sugar, and butter.

A Very Rich and Excellent Plum Pudding.—Beat eight eggs and mix them with a pint of good cream, half a pound of flour, and half a pound of crumb of bread; beat them well together, and put to them one pound of beef suet chopped very fine, one pound of currants, one pound of jar raisins stoned and chopped small, one pound of powdered sugar, two ounces of candied orange-peel, and the same of citron. Grate a nutmeg, and mix all well together with half a pint of brandy and wine; put it in a cloth, and tie it up close. It will take six hours to boil.

(b) Mock Plum Pudding.—Add to half a pound of flour half a pound of treacle, and half a pound of suet. Mix them together, and boil six hours.

(c) Swiss Pudding.—Butter a pie-dish, and put into it a layer of bread crumbs, then a layer of sliced apples, sprinkle over moist sugar, then a layer of bread crumbs, next of apples and sugar, and so on till the dish is filled, finishing with a thick layer of crumbs; melt fresh butter and pour over it. Grate in a little nutmeg, and bake an hour.

(d) Snowdon Pudding.—Mix together a breakfast-cupful each of chopped suet, crumbs of bread, and sifted sugar; add two eggs and a glass of wine, and the juice and rind of a lemon. Line the basin or mould with raisins, and boil it five hours.

A Richer Snowdon Pudding.—Take half a pound of bread crumbs, two ounces of sago, half a pound of suet chopped very fine, six eggs, half a glass of brandy, six ounces of orange or lemon marmalade, six ounces of moist sugar. Mix all well together, butter a mould, and ornament with swelled raisins; boil for one hour, and serve with marmalade sauce.

(e) White Pot.—Mix three pints of milk, half a pint of spring water, five eggs well beaten, three ounces of butter, a French roll sliced, white sugar and nutmeg to the taste. Bake it in a bowl two hours in a quick oven.

(f) Carrot Pudding.—Boil some carrots till they are quite soft, when cold beat half a pound in a mortar with six ounces of butter; when these are well mixed, beat in six ounces of sugar, two eggs (do not beat them first), half a nutmeg, a little brandy, and one spoonful of cream; mix these well together in a dish lined with paste, and put it in just before baking. An hour will bake it.

Another Carrot Pudding.—Weigh eight ounces of carrots when boiled, chop very fine, and mix with six ounces of currants, four ounces of flour, two ounces of suet chopped, six ounces of sugar, and half a nutmeg grated. Then stir in two eggs, and a table-spoonful of milk. This sized pudding requires two hours boiling. To be served up with a sauce made with brandy, sugar, and butter, with the yolk of a raw egg beaten in it.

(g) An Excellent Pudding without Eggs or Milk.—Mix half a pound of raw carrots grated finely, half a pound of suet, half a pound of flour, half a pound of currants, a quarter of a pound of raisins, two table-spoonfuls of sugar, and a wine-glassful of sherry. Boil the whole in a cloth for three hours.

(h) Potato Pudding.—Take a pound of fine mealy potatoes, boil them till very dry and floury, and mash them till perfectly smooth, taking care to avoid destroying their light texture by too heavy a pressure; then mix with them, while hot, four ounces of butter, five and a half of sugar, five or six eggs, a very little salt, and a liberal allowance of grated lemon peel. Pour these ingredients into a well-buttered dish, and bake the pudding in a moderate oven for about forty minutes. It should be turned out, and served with a layer of sifted sugar over it, or preserve round it. *Or*, it may be boiled, omitting the butter. When cold, this pudding eats like cake, and may be served as such.

Another.—Mash together three-quarters of a pound of potatoes when boiled and peeled, two ounces of powdered sugar, a quarter of a pound of suet or butter (if butter, beat it with the potatoes), and stir in two spoonfuls of rose water, then stir in the sugar with nine eggs well beaten, one spoonful of flour, a little mace, a pint of cream or good milk, and a little salt. Put a paste round the dish, and, if you like, a thin paste at the bottom; three-quarters of an hour in a quick oven will bake it, or without paste it may be turned out, and served with preserves round, or sifted sugar over it.

(i) Lemon Apple Pudding.—Take two or four small apples, boil them to a pulp in a little water; add the peel of one lemon cut fine, the juice of half a one, the yolks of four eggs, a large spoonful of brandy, and two ounces of butter melted; sweeten to the taste. Line a dish with puff paste, and fill with the mixture; then bake it. These proportions are for a rich pudding. For a common one omit the brandy, use one or two eggs, and one ounce of butter, and add rather more lemon juice.

(j) Lemon Bread Pudding.—Mix three ounces of bread grated, three ounces of loaf sugar, three ounces of butter, and the rind of a lemon grated; boil three-quarters of a pint of milk, and pour over it; when cold, add three eggs well beaten, and the juice of one lemon; put paste round the dish, pour in the above ingredients, and bake.

(k) Six-Hour Pudding.—Mix together one pound of suet, cut large as dice, three-quarters of a pound of raisins when stoned, six ounces each of flour and moist sugar, the rind of a lemon grated, the yolks of four eggs, and whites of two; butter the mould and boil six hours; serve with brandy-sauce.

(l) Cabinet Pudding.—Stone two dozen of large table raisins, butter a basin and stick them all over it, then fill up the basin with a thick custard made of milk, three or four eggs, about a tea-cupful of finely-grated bread, two table-spoonfuls of sugar, a few chopped almonds, and any other flavour that is approved. Boil an hour and a half, and when turned out the raisins will be outside.

(m) Light Boiled Pudding.—Boil a pint of new milk with two bay and three laurel leaves; take out the leaves, and pour the milk, when cold, over five ounces of bread crumbs, a quarter of a pound of loaf sugar, and one ounce of butter; add three eggs well beaten and a glass of sherry; butter a mould, and stick it round with raisins or not. Boil one hour.

(n) Apple Charlotte.—Boil four large apples, beat them to a pulp and sweeten them with loaf sugar, add one egg and the rind of a lemon grated; pour this into a dish which has been well buttered and lined with bread crumbs, cover the top with crumbs, and bake it a light brown.

(o) Biscuit Pudding.—Pour one pint of boiling milk on three penny Naples biscuits grated, cover it close; when cold stir in the yolks of four and the whites of two eggs, a little brandy, half a spoonful of flour, and some sugar. Boil this an hour in a basin, and serve it with pudding-sauce; some almonds may be blanched, and cut in four, and stuck over the pudding.

(p) Leamington Pudding.—Mix, of each two ounces, flour, sugar powdered, and butter melted, with three eggs, leaving out one white, and half a pint of cream. Bake it half an hour, and serve with hot wine sauce. It should be baked in three separate oval tins, an inch in depth, and placed one upon the other in the dish, the smallest being at the top. The largest tin should be eight and a quarter inches by five and a quarter, and the others, each rather more than the eighth of an inch smaller than the other.

(q) Cheltenham Pudding.—Mix three-quarters of a pound of flour, half a pound of suet chopped very fine, half a pound of currants, two or three eggs, two or three ounces of sugar, half a pint of milk, or enough to make the pudding thicker than batter, but thinner than dough; mix the dry ingredients first, beat the eggs and milk together, then mix all. Bake an hour and a quarter or half.

(*r*) French Apple Pudding.—Bake some apples with sugar until they become a marmalade; put them into a pie-dish already lined with puff-paste, make a custard with half a pint of milk and two eggs flavoured with butter and sweet almonds, and pour it on the apple. Bake in a slow oven.

(*s*) Manchester Pudding.—A pint of new milk boiled, three ounces of bread crumbs strewed in the boiling milk, and the grated rind of a lemon, are to be sweetened to the taste with lump sugar; then add the yolks and whites of four eggs, and three ounces of butter melted. Line a dish with a puff-paste, cover the bottom with preserve or marmalade, pour the pudding into it, and one hour will bake it.

(*t*) Chester Pudding.—Take a stewpan, and oil two ounces of butter; blanch twelve bitter and twelve sweet almonds, pound them in a mortar; take four ounces of powdered loaf sugar, the yolks of four eggs well beaten, the rind of a large lemon grated, and the juice. Put all these ingredients into the butter in the stewpan, and stir constantly till quite hot. Then put it into a dish lined with pastry, and bake it half an hour. Beat the whites of the eggs till perfectly stiff, put them upon the top of the pudding, and put it in the oven till it is set, and is of a light-brown colour.

(*u*) French Pudding.—Take half a pound of flour, half a pound of suet chopped fine, half a pound of currants, a quarter of a pound of treacle, and half a pint of milk; mix well, and boil in a basin three or four hours.

(*v*) Marlborough Pudding.—Put two ounces of candied-peel, shred fine, at the bottom of a dish, add six ounces of lump sugar pounded, six ounces of butter melted over the fire, with six yolks of eggs, taking care not to let the eggs boil, or they will curdle. Pour this hot over the peel. Line the dish with paste, and bake half an hour, or more, *till it is solid.* It requires a hot oven just at first, and then a rather slower heat.

(*w*) Selkirk Puddings.—Weigh three eggs in their shells, add the same weight for each of lump sugar, butter, and fine flour; beat up the eggs, whites and yolks together, for a quarter of an hour; pound the sugar fine and sift it; place the butter before the fire, and, when a little warmed, beat it to a froth with a wooden spoon; then mix the eggs and butter well together, after which add the flour and then the sugar. Bake in a mould, leaving room for its rising. It should be sent to table with melted butter and brandy.

(*x*) Thorpe Pudding.—Put a layer of preserves at the bottom of a pie-dish, and over it grated bread-crumbs three quarters of an inch thick, pour over them a custard; bake in rather a cool oven twenty-five minutes. One quart of milk and four eggs make custard enough for a good-sized pudding.

(*y*) Kendal Pudding.—Line a dish with puff paste, put into it a layer of preserves an inch thick, consisting of two or three sorts of jam. Cover the top with two eggs well beaten, mixed with milk and sugar; pour over until the dish is full. Strew over lemon-peel chopped fine, and a little sifted sugar. Bake in a slow oven a nice brown.

(*z*) Essex Pudding.—Weigh three eggs, an equal weight of butter, flour, and pounded sugar; melt the butter and beat the eggs to a froth, add the flour after the other ingredients are mixed. Put alternately a layer of this batter and one of preserves into a mould until full, then bake it for an hour and a half; turn out, and serve with white wine sauce.

(*aa*) Bath Pudding.—Boil four ounces of ground rice in one pint of cream till tender, and set it to cool. Add to it six yolks and two whites of eggs well beaten, with six ounces of pounded sugar, six ounces of butter, thirty sweet almonds blanched and pounded, and one small glass of brandy. Mix all the ingredients well together, and bake a quarter of an hour or more.

(*bb*) Bakewell Pudding.—Cover a dish with thin paste. Put a layer of jam of any kind half an inch thick. Take the yolks of eight eggs and the whites of two, rather less than a pound of sugar, the same of butter melted, and a few well pounded almonds. Beat all well together until it is well mixed. Pour it into the dish, and bake it in a moderate oven for an hour.

(*cc*) Orange Marmalade Pudding.—Take two table-spoonfuls of marmalade, three ounces of butter melted, and one ounce of sugar. Beat this well together in a mortar. Add the yolks of five eggs and the whites of two, and put it in a dish, immediately after which place it in the oven. Three-quarters of an hour will bake it.

1672. Receipts for Puddings suited for Company, &c.:—

(*a*) Ratafia Pudding.—Soak two sponge-cakes as for trifle, put over them one or two kinds of preserves, beat the yolks of four eggs, and the white of one; add three-quarters of a pint of new milk and a little nutmeg, sweeten and flavour it; pour it upon the cakes in the dish, place two ounces of ratafias on the top, and bake a quarter of an hour.

Another Ratafia Pudding.—Boil a quart of cream with four laurel leaves; take them out, and break in half a pound of Naples biscuits, the same of butter, some sherry and nutmeg, and a little salt. Take it off the fire, cover it up; when it is almost cold put in two ounces of blanched almonds grated fine, and the yolks of five eggs. Mix all well together, and bake half an hour. Grate a bit of sugar over the pudding.

(*b*) Lemon Pudding.—Mix together a quarter of a pound each of butter, loaf-sugar, and a quarter of a pint of milk; put altogether into a saucepan till dissolved, but it should not boil; when rather cool add three eggs well beaten, the rind of a large lemon grated, and a little juice; line the dish with a thin paste, and bake.

(*c*) College Puddings.—Grate the crumb of a twopenny loaf, shred eight ounces of suet, and mix with eight ounces of currants, one of citron minced fine, one of orange, a handful of sugar, half a nutmeg, three eggs beaten, yolk and white separately, and a glass of brandy. Mix, and make into the size and shape of a goose-egg. Put half a pound of butter into a fryingpan, and, when melted and quite hot, fry them gently in it over a stove; turn them two or three times till of a fine light brown. Serve with pudding sauce.

(*d*) A Pound Pudding.—Beat half a pound of fresh butter, with the same quantity of loaf-sugar, till it is like cream, then add six eggs, all well beaten separately, half a pound of flour, and flavour it with lemon-peel or candied peel. After the ingredients are all mixed, beat the whole for ten minutes; then put them into small tins and bake them.

(*e*) Little Sponge-cake Puddings.—Mix three eggs, leaving out one white, three ounces of powdered lump sugar, three ounces or spoonfuls of flour, three ounces of butter beaten. Add the eggs and then the flour, then the sugar, beating each before adding the other. Bake about a quarter of an hour in *little* cups, putting in the oven as soon as beaten; lay a little orange marmalade on them when baked.

Another Receipt.—Beat the whites of two and the yolks of four eggs, and into that beat six ounces of sugar sifted, and four ounces of flour dried for a few minutes, till well mixed. Put a spoonful into a cup buttered (rather more for a pudding), and bake in a quick oven. This quantity will make ten or twelve cakes. Wine sauce with the puddings.

(*f*) Rich Teacup Puddings.—Scald five ounces of crumbs of bread in milk, and add six ounces of suet chopped very fine, eight ounces of currants, seven eggs, leaving out two whites, three table-spoonfuls of brandy, a little nutmeg, salt, lemon, and candied-peel and sugar to the taste. Bake in teacups, and serve with wine sauce.

(*g*) Little Citron Puddings.—Take half a pint of cream, one spoonful of fine flour, two ounces of sugar, a little nutmeg; mix it well together with the yolks of three eggs, put it in teacups (five are enough), and stick in it two ounces of citron cut very thin. Bake in a pretty quick oven.

(*h*) Madeira Puddings.—Take three eggs, weigh against them in their shell sugar, flour, and butter, separately; beat the butter to a cream, beat the eggs well, mix, and beat together, adding the sugar; then put into cups, and bake in a quick oven. Serve with wine sauce poured over them.

(*i*) Prussia Puffs.—Make a light batter, and put in some candied orange-peel. Bake in cups, and serve with wine sauce.

(*j*) Spanish Puffs.—Take a large breakfast-cup of milk with a small piece of butter, let it come to a boil, but, before it boils up, mix in flour with the left hand, while stirring as quickly as possible with the right, till nearly as thick as dough. Take it off the fire, and drop in three yolks of eggs, mixing one thoroughly before adding another. Then turn it out into a plate, and take a small piece off with the end of a spoon. Fry it in lard, of a nice brown. Sprinkle with sugar and serve in a napkin.

(*k*) Light German Puffs or Puddings.—Melt three ounces of butter in one pint of cream, and let it stand till nearly cold; then mix with it two ounces of fine flour, two ounces of sugar, four yolks and two whites of eggs, and a little rose or orange-flower water. Butter some little cups, pour in the ingredients, and bake for half an hour. They should be taken out of the cups and served the moment they are done, or they will be heavy; serve with white wine and sugar.

(*l*) Oxford Puddings.—Take half a pound of suet chopped fine, grate two penny loaves, and half a pound of currants, the yolks of six eggs, a quarter of a pound of lump sugar, a little nutmeg, one ounce of candied lemon-peel, and a glass of sherry or brandy; mix this all together till it is stiff, divide into seven or eight parts and fry, or in balls, a light brown; serve with wine sauce.

(*m*) Balloon Pudding.—Add three table-spoonfuls of flour to five eggs, mix them with a pint of new milk, in which put a small lump of butter; warm the milk sufficiently to melt the butter. Butter some teacups, and fill them half full. Bake a quarter of an hour; serve with wine sauce.

(*n*) Cup Rice Pudding.—Steep a teacupful of rice in rather less than a quart of milk, add four eggs beaten, two ounces of butter, a quarter of a pound of currants, sugar to the taste, grated lemon peel, and nutmeg; a little cream is a great improvement. Bake in cups, and serve with wine sauce.

(*o*) Everton Pudding (*small*).—Take three eggs and their weight in sugar, pounded and sifted, the same weight of flour and butter, and half a lemon. Put altogether, excepting the eggs, and beat them twenty minutes. The eggs must also be well beaten, then added to the other ingredients, and the whole well beaten. Bake in cups half an hour in a cool oven.

(*p*) Souffle Pudding.—Take a pint of new milk, put half into the stewpan, and mix the other half with five spoonfuls of fine flour. Let the milk be scalding hot, then stir in the other milk and flour. Let it all scald five minutes, stirring it all the time. Then take five eggs, stir in the yolks. Beat the whites to a froth, and *when cold* mix them all together. Sweeten to taste, flavour with any thing you like; strain it; stick the mould with any dried fruit. Put a buttered paper under the cloth. Boil it an hour and a half, and take it off five minutes before it is wanted.

Another.—Boil half a pint of very thin cream with lemon-peel, cinnamon, and sugar; let it stand till cold, then add four ounces of butter, two handfuls of flour, five yolks of eggs, the whites beat up to a stiff froth and a little wine or brandy; first put the butter and flour into a stewpan, and melt them together, then stir in the cream, &c., that had been boiled, then the five yolks of eggs, one at a time. Mix all together over the fire, take it off, add the whites, and boil for one hour as above.

(*q*) Dutch Wafer Puddings.—Set a pint of cream over the fire, and stir in half a pound of butter; then beat into it a quarter of a pound of flour well dried. Take seven eggs, leaving out four whites, beat them well, and mix them with the other ingredients in an earthen pan; set it before the fire for an hour, then put it into small patty-pans or saucers, and bake them in a hot oven till they are brown; turn them out, and serve at once with good wine sauce poured over them.

(*r*) Eve's Pudding.—Weigh four eggs in their shells, and add the same weight of flour, sugar, and butter; beat the butter into cream, then mix the flour, beating it with the butter, then the sugar; add a little citron, almonds, or lemon-peel; break the eggs and beat yolks and whites separate, and mix them in separately; then lightly grease some small patty-pans; put a small quantity in each and let them rise ten minutes before the fire, after which put them into the oven.

(*s*) Indian Meal Puffs (*American*).—Boil a quart of milk, and stir into it, gradually, eight large table-spoonfuls of Indian meal; four large table-spoonfuls of powdered sugar; and a grated nutmeg. Stir it hard; letting it boil a quarter of an hour after all the Indian meal is in. Then take it up, and set it to cool. While it is cooling, beat eight eggs as light as possible, and stir them gradually into the batter when it is quite cold. Butter some large teacups; nearly fill them with the mixture, set them into a moderate oven, and bake them well. Send them to table warm, and eat them with butter and molasses; or with butter, sugar, lemon-juice, and nutmeg stirred to a cream. They must be turned out of the cups.

1673. Receipts for Dumplings:—

(*a*) Bread and Suet Dumplings.—Take half a pound of grated bread, half a pound of suet cut small, the juice and grated rind of a lemon, a quarter of a pound of moist sugar, and two eggs. Mix all together, and make it into five dumplings; boil them in cloths half an hour, and serve with sweet sauce in the dish.

(*b*) Rice Balls.—To a quarter of a pound of rice add a pint and a half of milk, and boil it with a little cinnamon, sugar, and lemon-peel, until it is quite tender; allow it to remain till cold, and then make it into balls. Beat up an egg, and roll the balls in it, and afterwards in grated bread crumbs. Fry them in lard, drain them on a piece of paper, and serve them up covered with sifted sugar.

(*c*) Lemon Dumplings.—Take the juice and rind of a lemon, and half a round of bread; grate both very fine, and add a quarter of a pound of suet chopped fine, a quarter of a pound of moist sugar, and two eggs; mix all well together, put it in teacups tied on with cloths, and boil them.

(*d*) Suet Dumplings.—Make as for suet pudding (which see) and drop into boiling water, or into the boilings of beef; or they may be boiled in a cloth.

(*e*) Yeast or Suffolk Dumplings.—Make a very light dough with yeast, as for bread, but with milk instead of water, and add salt. Let it rise an hour before the fire. Twenty minutes before they are to be served, have ready a large stewpan of boiling water, make the dough into balls the size of a middling apple, throw them in, and boil twenty minutes. To ascertain when they are done enough, stick a clean fork into one, and if it come out clear, it is done. Before serving, tear them apart on the top with two forks, for they become heavy by their own steam. Serve with meat, or sugar and butter, or salt.

(*f*) Apple Dumplings.—Pare large apples (codlins are the best), scoop out the core with a small knife, then cover with a thin suet or butter crust, made as for puddings, and tie up in a cloth, to boil from twenty minutes to half an hour. *Or*, they may be baked.

(*g*) Small Apple Dumplings.—Pare the apples, scoop out the cores, fill up the space with moist sugar and lemon-peel. Boil them in cups with a thin paste round them; when done, pour custard upon them. Apples prepared in this way, with a thin paste round them and baked on flat tins, are excellent.

(*h*) Currant Dumplings are made as for suet pudding, mixing in with the flour about one quarter of its weight of foreign currants, picked and washed. After mixing, the mass is divided into dumplings, and boiled in cloths.

Sect. 2.—Pancakes, Sweet Omelets, and Souffles.

1674. Pancakes are made by forming a common batter, and then frying this in a thin layer. When of a large size they are called pancakes; and when so small as to allow of several being fried in the same pan, they are called fritters. These are often mixed with apples, currants, &c. Omelets are made in a similar way, the ingredients being slightly different, and being also fried in thicker layers as to substance. There is a little art in turning the pancake, which, by a clever cook, is "tossed" in the air and caught again as it falls; but this is not by any means necessary, as with the aid of a common fork the edge may easily be raised, and the whole turned over. The frying is conducted upon the principles described at page 463.

1675. To Beat Eggs.—The following excellent remarks on the proper mode of effecting this apparently simple operation are extracted from Miss Leslie's book on Cookery:—"Those who do not know the right way, complain much of the fatigue of beating eggs, and therefore leave off too soon. There will be no fatigue if they are beaten with the proper stroke, and with *wooden* rods, and in a shallow, flat-bottomed *earthen* pan. The coldness of a tin pan retards the lightness of the eggs. For the same reason do not use a metal egg-beater. In beating them do not move the elbow, but keep it close to the side. Move only the hand at the wrist, and let the stroke be quick, short, and horizontal; putting the egg-beater always down to the bottom of the pan, which should therefore be shallow. Do not leave off as soon as the eggs are in a foam; they are then only *beginning* to be light. But persist till after the foaming has ceased, and the bubbles have all disappeared. Continue till the surface is smooth as a mirror, and the beaten egg as thick as a rich boiled custard; for till then it will not be really light. It is seldom necessary to beat the whites and yolks separately, if they are afterwards to be put together. The article will be quite as light, when cooked, if the whites and yolks are beaten together, and there will then be no danger of their going in streaks when baked. When white of egg is to be used without any yolk (as for macaroons, meringues, icing, &c.), it should be beaten till it stands alone on the rods, not falling when held up."

(*a*) Common Pancakes.—Make a light batter of three spoonfuls of flour, three eggs well beaten, and half a pint of milk, some of which, with the eggs, is to be mixed with the flour; to the other part, put a quarter of a pound of butter melted. Then mix altogether, and put into the fryingpan in a very thin layer. Fry with lard or dripping; but do not put any butter into the pan to fry them after the first frying, as they will give out enough afterwards to keep up the stock. Sugar and lemon should be served to eat with them. *Or*, when eggs are scarce, make the batter with flour, small beer, ginger, &c. *Or*, clean snow with flour, and very little milk will serve, but not nearly as well as eggs.

(*b*) Rich Pancakes, Fried without Butter or Lard.—Beat six fresh eggs extremely well, and mix when strained with a pint of cream, four ounces of sugar, a glass of wine, half a nutmeg grated, and as much flour as will make it almost as thick as ordinary pancake batter, but not quite. Heat the fryingpan tolerably hot, wipe it with a clean cloth; then pour in the batter to make thin pancakes, and watch them that they do not burn, which is to be prevented by turning them.

(*c*) Rice Pancakes.—Boil half a pound of rice to a jelly in a small quantity of water; when cold mix it with a pint of cream, eight eggs, a bit of salt and nutmeg; stir in eight ounces of butter just warmed, and add as much flour as will make the batter thick enough. Fry in as little lard or dripping as possible.

(*d*) New England Pancakes.—Mix a pint of cream, five spoonfuls of fine flour, seven yolks and four whites of eggs, and a very little salt; fry them very thin in fresh butter, and between each strew sugar and cinnamon. Send up six or eight at once.

(*e*) Fritters.—Make them of any of the batters directed for pancakes, by dropping a small quantity into the pan; or make the plainer sort, and put pared-apple sliced and cored into the batter, and fry some of it with each slice. Currants, or sliced lemon as thin as paper, make an agreeable change. Fritters for company should be served on a folded napkin in the dish. Any sort of sweetmeat or ripe fruit may be made into fritters.

(*f*) **Spanish Fritters.**—Cut the crumb of a French roll into lengths, as thick as the finger, in any approved shape. Soak in some cream, nutmeg, sugar, and pounded cinnamon, beaten up with an egg. When well soaked, fry of a nice brown, and serve with butter, wine, and sugar sauce.

(*g*) **Potato Fritters.**—Boil two large potatoes, mash them well, beat four yolks and three whites of eggs, and add to the above with one large spoonful of cream, another of sweet wine, a squeeze of lemon, and a little nutmeg. Beat this batter half an hour at least. It will be extremely light. Put a good quantity of fine lard in a stewpan, and drop a spoonful of the batter at a time into it. Fry them; and serve with a sauce composed of a glass of white wine, the juice of a lemon, one dessert-spoonful of peach-leaf or almond water, and some white sugar warmed together, or the common wine sauce (which see).

(*h*) **Bread Fritters.**—Pick, wash, and dry half a pound of Zante currants, and, having spread them out on a flat dish, dredge them well with flour. Grate some bread into a pan, till you have a pint of crumbs. Pour over the grated bread a pint of boiling milk, in which has been stirred, as soon as taken from the fire, a piece of fresh butter the size of an egg. Cover the pan, and let it stand an hour. Then beat it hard, and add nutmeg, and a quarter of a pound of powdered white sugar, stirred in gradually, and two table-spoonfuls of the best brandy. Beat six eggs till very light, and then stir them by degrees into the mixture. Lastly, add the currants, a few at a time; and beat the whole very hard. It should be a thick batter. If it turns out too thin, add a little flour. Have ready over the fire a hot frying-pan with boiling lard. Put in the batter in large spoonfuls (so as not to touch), and fry the fritters a light brown. Drain them on a perforated skimmer, or an inverted sieve placed in a deep pan, and send them to table hot. Serve them with wine and powdered sugar.

(*i*) **Apple Fritters.**—Mix together half a pint of milk, two large table-spoonfuls of flour, one of sugar, two apples chopped fine, and a very small quantity of carbonate of soda; put a dessert-spoonful into the pan, and fry them a light brown.

(*j*) **Indian Meal Fritters.**—Having beaten eight eggs very light, stir them gradually into a quart of rich milk, in turn with twelve large table-spoonfuls of yellow Indian meal, adding a salt-spoon of salt. When all is in, stir the whole very hard. Have ready over a clear fire, in a pot or a large fryingpan, a pound of fresh lard, boiling fast; drop the batter into it, a ladleful at a time. If you find the batter too thin, stir into it a little more Indian meal. As the lard boils away, replenish it with more. As fast as they are done, take out each fritter with a perforated skimmer; through the holes of which let the lard drip back into the pot. The fritters must all be well drained. Send them to table hot, and eat them with wine and sugar, or with molasses. In cooking these fritters, you may drop in three or four, one immediately after another; they will not run if the lard is boiling fast, and the batter thick enough, and made with the proper number of eggs.

1676. **Souffles and Fondus** are elegant and delicious preparations of eggs and milk, variously flavoured, the latter with cheese, and whisked into a froth, as directed at the beginning of this section. After which they are baked, the heat of the oven keeping up the frothing until the material of the egg is set; but great care is necessary to avoid the falling down of the souffle as soon as it is removed from the oven, and some cooks stand guard over their handiwork with a salamander, until the moment when they enter the dining-room. (For Fondus, see page 498.)

(*a*) **Sweet Souffle.**—Take a pint of milk and as much flour as will come to a thick paste over the stove; keep stirring it all the time, add six yolks of eggs and a pinch of salt, as much sugar as you like. Beat eight whites of eggs all to a froth, stir them altogether. To be put into the oven a quarter of an hour before wanting it—the oven must be quick. Glaze it with white sugar, and send quickly to table. It may be made with ground rice. The rind of a lemon grated, or lemon juice, gives it a nice flavour.

(*b*) **Friar's Omelet.**—Prepare twelve apples as for sauce, and stir in a quarter of a pound of sugar and a quarter of a pound of butter; when cold, add four eggs well beaten, and fry in butter or lard made very hot, as for French frying, or proceed as follows:—Well butter a dish, strew bread crumbs or vermicelli over it, so as to make them stick to it, put in the mixture, then strew crumbs or vermicelli plentifully over the top; when baked, turn it out of the dish and strew sugar over.

(*c*) **French Promises.**—Mix together half a pint of milk, two tea-spoonfuls of French brandy, one egg, and a little grated ginger, Make it with flour a proper thickness for pancakes, and drop into a fryingpan with the lard very hot.

(*d*) SOUFFLE OF RICE AND APPLES.—Steep one and a half teacupful of rice in milk, add the pulp of five good-sized apples, sweeten the whole, and put it into a dish. Then beat the whites of two eggs with two ounces of sifted lump sugar, and pour it over the rice; and, just before you put it in the oven, dust a little sugar on the top of it.

(*e*) STRAWBERRY OR APPLE SOUFFLE.—Stew the apples with a little lemon-peel, sweeten them, then lay them pretty high round the inside of a dish; make a custard of the yolks of two eggs, a little cinnamon, sugar, and milk. Let it thicken over a slow fire, but not boil. When ready, pour it in the inside of the apple. Beat the whites of the eggs to a strong froth, and cover the whole. Throw over it a good deal of pounded sugar, and brown it of a fine brown. Any fruit made of a proper consistence does for the walls. Strawberries when ripe are delicious.

(*f*) SOUFFLE OF POTATOES WITH LEMON.—Roast about ten potatoes; when they are done, open them, and scoop out the floury part, and mix it with half a pint of cream that has boiled, and in which has been infused the peel of a lemon; add some butter, a pinch of salt and a little lump sugar, not too much, lest your souffle should not be light, but enough to give flavour. Add the yolks of four eggs to the above. Then beat the whites of six eggs, and mix with the rest. Pour it gently into a dish, and bake in a moderate oven. When done, sift a little sugar over it, and brown with the salamander. It should be served up immediately.

SECT. 3.—PUDDING SAUCES.

1677. COMMON WINE SAUCE.—Make thin a few ounces of melted butter (see page 483), then add from a table-spoonful to two of coarsely pounded lump sugar, and a glass of sherry with half a glass of brandy; a little grated lemon-peel or nutmeg, or both together, are improvements.

(*a*) ARROWROOT SAUCE FOR PUDDINGS.—Mix a small teaspoonful of arrowroot with a little cold water, and boil a large teacupful of sherry or raisin-wine with sugar enough to sweeten it. Make the arrowroot with this, and pour over the pudding. It is an improvement to rub a lump or two of the sugar on lemon-peel.

(*b*) BURNT CREAM SAUCE.—Put two ounces of sifted sugar on the fire, in a small saucepan, stir it, and when quite brown pour slowly in a gill of thin cream, stirring it all the time. To be used as a sauce to custard, or batter pudding.

(*c*) SWEET PUDDING SAUCE WITHOUT WINE is made with melted butter, a little cream added, sweetened to the palate, and flavoured with nutmeg, cinnamon, or mace.

(*d*) PLUM PUDDING SAUCE.—Add to four ounces of melted butter, or thick arrowroot, an ounce and a half of each of the following; viz., sherry, French brandy, and curacoa; sweeten to the taste, and add also a little nutmeg and lemon-peel grated.

(*e*) FRUIT SAUCES are easily made for any plain puddings, by stewing the fresh fruit with rather less sugar than for preserving, and adding water till they are of the proper consistence for a sauce. Some cooks mix a little arrowroot with the water, and then strain before serving.

CHAP. XIV.

CREAMS, CUSTARDS, JELLIES, AND STEWED FRUIT.

SECT. 1.—GENERAL OBSERVATIONS.

1678. Creams include in their ranks a variety of rich and delicious sweet dishes, chiefly made with a foundation of milk or cream, and either whipped into a froth or eaten in a solid state. Isinglass or gelatine, or calf's foot jelly, are used to stiffen them, together with eggs in some cases.

1679. COLOURING TO STAIN CREAMS AND JELLIES:—

(*a*) For a beautiful *red*, boil fifteen grains of cochineal in the finest powder, with a drachm and a half of cream of tartar in half a pint of water, very slowly for half an hour; add in boiling a bit of alum the size of a pea. *Or*, use beet-root sliced, and some liquor poured over.

(*b*) For *white*, use the almonds finely pounded, with a little drop of water. *Or*, use cream.

(*c*) For *yellow*, yolks of eggs, or a bit of saffron steeped in the liquor and squeezed.

(*d*) For *green*, pounded spinach-leaves or beet-leaves; express the juice, and boil in a tea-cup placed in a sauce-pan of water to take off the rawness.

(*c*) THE MIXTURE of two coloured jellies or of blancmange or cream with jelly, is made by allowing the first layer in the mould to harden sufficiently to bear the succeeding one of a different colour without their intermixing; several colours may be added in this way.

1680. THE BEST MODE OF MELTING ISINGLASS.—To melt a quarter of a pound of isinglass, take a little more than a pint of water, into which throw in the twelfth part of the white of an egg; beat the water well till it becomes white; throw the isinglass into that water, and lay it on the stove over a very slow fire. If it is kept covered, it will melt more easily. Take care it does not burn, for then it can never be made clear, besides it would have an unpleasant taste. For a larger quantity put more water, but not more white of egg. If the isinglass is required to be particularly clear, squeeze into it the juice of a lemon.

1681. IN RUNNING JELLY through the flannel bag, it is apt to become cold and refuse to run. To avoid this, it is a good plan to fix the bag to a couple of sticks stretched across a large furnace, in the bottom of which are a few quarts of boiling water, so that the proper temperature is maintained.

1682. MOULDS of various forms are required, for the purpose of making blancmange, jelly, &c. They are, however, so well known as scarcely to need description. In order to get the articles out, it is only necessary, when they are once quite cold, to loosen the edges with a knife and invert them, giving a shake or two.

SECT. 2.—CREAMS AND CUSTARDS.

1683. TO WHIP CREAMS, follow the directions given for beating eggs at page 518.

1684. TO WHIP FRUIT CREAMS, rub a lump or two of sugar on the peel of a lemon, then sprinkle the juice of half a lemon on the sugar, and leave it for a time to melt (a table-spoonful of sugar is enough, if the preserve is very sweet). Then mix the jam or jelly with the above; and lastly, add a pint of good cream by degrees to the whole, and whip it steadily till *thick;* sometimes this will be in five or ten minutes. Cease whipping as soon as it is thick enough. Some cooks add a spoonful of brandy.

1685. RECEIPTS FOR WHIPPED CREAMS, &c.:—

(*a*) RASPBERRY CREAM.—Boil an ounce of isinglass in three pints of milk a quarter of an hour; strain it; when cool, add half a pint of raspberry syrup, stir it well, and sweeten it; add a glass of brandy, and, when nearly cold, put it into a mould.

(*b*) PINE-APPLE CREAM.—Infuse some foreign pine-apple cut in slices (or the *rind* only will do) in boiling cream, and proceed as is usual for other fruit creams (1684).

(*c*) SWISS CREAM.—Flavour with lemon-peel one pint of cream (leaving out a little to mix with two teaspoonfuls of fine dried flour to a smooth batter), add six ounces of lump sugar; put the cream and sugar into a saucepan, and, when boiling, add by degrees the flour; simmer four or five minutes, stirring all the time; pour it out, and, when cold, mix with it by degrees the juice of two lemons. Take a quarter of a pound of macaroons, put part of them in the dish, and pour over them a glass of white wine, then part of the cream, then macaroons and cream again; ornament with sliced citron. It should be made some hours before wanted for use.

(*d*) APPLE CREAM. — Pare and core ten fine codlins, or other good baking apples; beat them in a mortar with a pint of cream; strain it into a dish, and put sugar, bread crumbs, and a glass of wine to it. Stir it well.

(*e*) ORANGE CREAM.—Boil the rind of a Seville orange till very tender; beat it fine in a mortar; put to it a spoonful of the best brandy, the juice of a Seville orange, four ounces of loaf-sugar, and the yolks of four eggs; beat all together for ten minutes; then, by gentle degrees, pour in a pint of boiling cream; beat till cold; put into custard-cups set in a deep dish of boiling water, and let them stand till cold again. Put at the top small strips of orange-peel cut thin, or preserved chips.

(*f*) ALMOND CREAM.—Beat four ounces of sweet and a few bitter almonds in a mortar, with a tea-spoonful of water to prevent oiling, both having been blanched. Put the paste to a quart of cream, and add the juice of three lemons sweetened; beat it up with a whisk to a froth, which take off on the shallow part of a sieve; fill glasses with some of the liquor and the froth.

(*g*) SOLID CLOUTED CREAM.—String four blades of mace on a thread; put them to a gill of new milk, and six spoonfuls of rose-water; simmer a few minutes; then, by degrees, stir this liquor strained into the yolks of two new eggs well beaten. Stir the whole into a quart of *very* good cream, and set it over the fire; stir it till hot, but not boiling hot; pour it into a deep dish, and let it stand twenty-four hours. Serve it in a cream dish, to eat with fruits. Many people prefer it without any flavour but that of the cream; in which case use a quart of new milk and the cream, or do it as the Devonshire scalded cream (page 348).

(*h*) To Make Gooseberry Fool.—Take two quarts of unripe gooseberries, set them on the fire in one pint of water; when they begin to simmer, turn yellow, and begin to plump, throw them into a colander or sieve to drain; then press the pulp through a sieve into a dish; make it pretty sweet, and leave it till cold. Take two quarts of new milk, and four yolks of eggs beaten with a little nutmeg, stir it softly over a slow fire; when it begins to simmer take it off, and by degrees stir it into the pulp. If made with cream, the eggs may be omitted, and more gooseberries added if preferred thicker; a little brandy is a great improvement. It should be served cold. This quantity is sufficient to fill three ordinary glass dishes. *Or*, by some it is preferred to rub the gooseberries through a colander only, or merely to mash them after draining, so as to retain all the skins.

(*i*) Rhubarb Fool is made as above, substituting the stalks of the rhubarb, cut in short lengths, for the gooseberries, and boiling them in a gill of water only.

(*j*) Apple Fool.—Stew apples as directed for gooseberries, and then peel and pulp them. Prepare the milk, &c., and mix as before.

(*k*) Orange Fool.—Mix the juice of three Seville oranges, three eggs well beaten, a pint of cream, a little nutmeg and cinnamon, and sweeten to the taste. Set the whole over a slow fire, and stir it till it becomes as thick as good melted butter, but it must not be boiled; then pour it into a dish, and set it by till cold.

(*l*) Stone Cream.—Add three-quarters of an ounce of isinglass to one quart of thin cream, previously dissolving the isinglass in a small quantity of water; then add the cream sweetened to taste, and let it boil from ten to fifteen minutes; meanwhile grate the rind of a small lemon into about half a pint of sherry or raisin wine, and put in the dish with preserved apricots or any light-coloured preserve. Stir the cream occasionally, and when almost cold pour it carefully over the preserve. In order that the two shall not mix, make the cream the day before.

Another Stone Cream.—Line a dish with orange marmalade, or some other preserve, squeeze on it the juice of a lemon, and grate upon it the peel. Then dissolve two ounces of extract of calves' feet, or half an ounce of isinglass dissolved in water, and add to it a pint of cream well sweetened. Pour this over the marmalade. It should be made the day before.

Another Stone Cream.—Lay some preserve of different sorts in the bottom of a deep glass dish, then pour some blancmange over it till the dish is rather more than half full. When *perfectly cold*, pour on the blancmange a *good thick* custard to fill the dish, and when that is also cold stick blanched almonds on the top.

(*m*) Lemon Cream in Glasses.—To the peel of one large lemon pared thin put the juice of two, half a pint of water, the whites of four eggs and yolk of one beaten well, and half a pound of lump sugar; stir it over a slow fire till it is the thickness of cream; strain it, and put it in glasses.

Lemon Cream without Cream.—Take the peel of a large lemon and put it into a glass, then squeeze the juice of two lemons upon it, add to it half a pint of water and four eggs (leaving out three of the yolks), well beaten, and add half a pound of fine sifted sugar. Strain and set it over a slow fire, stirring it till it is as thick as a good cream.

Lemon Cream with Arrowroot.—Dissolve and mix up two table-spoonfuls of arrowroot in a little cold water, add one and a half pint of boiling water, and boil it in a nice clean saucepan for a few minutes, stirring it all the time; add a couple of pinches of saffron (to colour it), and as much lemon juice, and grated peel, and lump sugar as will flavour and sweeten it; then add the yolks of five or six eggs well beaten up; stir the whole on the fire for a few minutes (but do not let it curdle), and cool. The above quantity will fill about twelve small glasses, and requires two or three lemons. It is not so good made with fewer eggs (see White Lemon Cream).

White Lemon Cream.—Make the cream, as above, with the whites instead of yolks of eggs (leaving out the saffron). The whites must be well beaten, but not frothed, and an egg or two more is an improvement, making it whiter. If it should appear to curdle, the straining makes all right. In this manner three or four eggs will make six glasses of *white*, and six of yellow lemon cream.

(*n*) Chocolate or Orange Cream.—Mix together two yolks of eggs, a pint of milk, sugar to the taste, a bit of butter twice the size of a walnut, a spoonful of dried and sifted flour, and sliced chocolate, which should be put to the milk cold; put all in a stewpan, and stir gently till it just boils. If you wish it flavoured with orange or lemon, chop some peel very fine, and put it in as you take it off the fire, and it retains a fresh flavour.

(*o*) Coffee Cream.—Boil a calf's foot in water till it wastes to a pint of jelly clear of sediment and fat, make a teacup of very strong coffee, clear it with a bit of isinglass. To be perfectly bright, pour it to the jelly with a pint of very good cream and as much lump sugar as is pleasant; give it one boil up, and pour it into the dish; it should jelly, but not be stiff.

(*p*) **Rice Cream.**—Soak two and a half to three ounces of rice over night in water for a short time, then put in a sieve to drain and dry. Next morning to be half pounded, then boiled in half a pint of milk, then put in a basin to cool; add half a pint of cream, half an ounce of isinglass, and whip it to a strong froth; put it in the mould all day, and add sweetmeats, or fresh fruits, or French prunes, in the middle.

(*q*) **Brandy Cream.**—To a pint of thick cream put a teacupful each of sifted sugar, and brandy; add the juice of a lemon. Whisk till it thickens, and pour into a glass dish.

(*r*) **Imperial Cream.**—Take the juice of three large oranges or two lemons, sweeten it well with double-refined sugar pounded and sifted, put it into the dish you design to serve it up in, then take a pint of thick cream, sweeten it a little, then boil it and stir it till it is milk warm; put it in a teapot with one spoonful of orange-flower water, and pour it very high on the juice, which will make it curdle, and look like a honey-comb.

(*s*) **Apple Snow.**—Take a pinch of powdered alum, with half a pound of the pulp of roasted apples, half a pound of powdered sugar, the juice of one good lemon, and the whites of three eggs. Whip all together for an hour, drop it lightly on a glass dish.

(*t*) **Leche Crema.**—Beat up three eggs, leaving out two whites, add to them a pint of new milk, and mix very carefully a table-spoonful of flour, with two ounces of finely grated lemon-peel; boil this over a slow fire, constantly stirring it. Prepare a shallow dish, with some ratafia cakes at the bottom soaked in brandy and sherry, or covered with preserve; then, when the créma is boiled pretty thick, pour it over the cakes. To be sent to table cold.

(*u*) **Floating Islands.**—Whip up two spoonfuls of jelly or jam, with one of white of egg; beat well, then drop it with a spoon on a dish of cream.

(*v*) **Sir Walter Scott's Wassail Bowl.** Crumble sponge-cakes with ratafias and macaroons into a glass dish, and cover them with rich raisin-wine, and a glass of brandy. The juice of a lemon should first be squeezed over the crumbled cake. Have a rich thick custard ready made, and pour it upon the whole *warm*, but *not hot*. If approved, add a little raspberry jam.

(*w*) **Trifle.**—Soak sponge-biscuits, macaroons, and ratafias, &c., in a dish with one pint of raisin-wine and about a glass of brandy, in the morning; then lay upon it a layer of preserve, and upon that the whip given below, reserving a little to put on just before sending it to table.

Whip for Trifle.—Put two wine-glasses of white wine, with a stick of cinnamon, lemon peel, and a blade of mace into a saucepan over the fire until it simmers, then strain it, and put it to stand until nearly cold, then add another glass of wine, with one of brandy, and an equal quantity of cream and milk; sugar to your taste. Beat it well with a whisk, and as the froth rises take it off, and lay it on a sieve, the hollow part down. If for the evening, make this whip the first thing in the morning.

Solid Syllabub for Trifle, or to put into Glasses.—A quart of cream, one glass of brandy, two glasses of raisin-wine, the juice of two lemons and the essence of the peel taken by rubbing lumps of sugar upon them. Sweeten to the taste and whip it all together. A pint is enough for a trifle.

An Excellent Trifle.—Lay macaroons and ratafia drops over the bottom of a dish, and pour in as much raisin-wine as they will suck up; which, when they have done, pour on them cold rich custard, made with plenty of eggs and some rice flour; it must stand two or three inches thick. On that put a layer of raspberry-jam, and cover the whole with a high whip, made the day before of rich cream, the whites of two well-beaten eggs, sugar, lemon-peel, and raisin-wine, well beaten with a wire whisk. If made the day before it is used, it has quite a different taste, and is far better.

Gooseberry or Apple Trifle.—Scald such a quantity of either of these fruits as, when pulped through a sieve, will make a thick layer at the bottom of the dish; if of apples, mix the rind of half a lemon grated fine, and add to both as much sugar as will be pleasant; if of gooseberries, a little nutmeg and brandy. Mix half a pint of milk, half a pint of cream, and the yolk of one egg; give it a scald over the fire, and stir it all the time; do not let it boil; add a little sugar only, and let it grow cold. Lay it over the apple with a spoon, and then put on it a whip made the day before, as for other Trifle.

Chantilly Cake, or Cake Trifle.—Bake a rice cake in a mould. When cold cut it round about two inches from the edge with a sharp knife, taking care not to perforate the bottom. Put in a thick custard, and some tea-spoonful of raspberry jam, and then put on a high whip.

(*x*) **Lemon Solid.**—Mix the rind of one lemon grated, and the juice squeezed in, with one pint of cream, half an ounce of isinglass boiled in a little water, and six ounces of sugar boiled with the cream. When the cream and isinglass are almost cold, pour it on the lemon.

Another Lemon Solid.—Grate the peel of a large lemon, and put the juice into a basin, with brandy and sugar to the taste. Boil a quart of cream and pour it into the lemon, stirring it till it is cold.

1686. **Receipts for Moulded Creams, &c.** :—

(*a*) **Blancmange.**—Boil two ounces of isinglass in three half-pints of water half an hour; strain it through fine muslin into a pint and a half of cream; sweeten, and add a few bitter almonds pounded. Let it boil once up; if not wanted very stiff, a little less isinglass will do. Stir the blancmange occasionally while cooling, but let it settle before pouring into the moulds, or the blacks will settle in the moulds, and show themselves at the top when turned out.

Another Blancmange.—Infuse for an hour, in one pint and three-quarters of milk, the thin rind of a small lemon, and eight bitter almonds blanched and bruised; add two ounces of sugar and one and a half ounces of gelatine; boil them over a slow fire, stirring until the isinglass or gelatine is dissolved. Take off the scum. Stir in half a pint of rich cream, and strain the blancmange into a bowl. It should be moved gently with a spoon till nearly cold, to prevent the cream from rising to the top; add by degrees a wine-glassful of brandy, and when nearly cold pour it into a mould.

(*b*) **Arrowroot Blancmange** (*excellent*). To a quart of new milk add a quarter of a pound of arrowroot sweetened to taste, and a pennyworth of cinnamon water; stir it well whilst on the fire, boil ten minutes, pour it into a mould, and let it stand twenty-four hours. Many prefer the flavour of lemon peel or laurel leaf to the cinnamon.

(*c*) **Rice Blancmange.**—Take three tablespoonfuls of very finely ground rice, stir it gently into three gills of good new milk; add lump-sugar to the taste, but not too much, or it will prevent its setting. Flavour it with lemon-peel or almond essence; set it on the fire, and let it boil thoroughly, stirring it and beating it extremely well for rather more than half an hour, and then pour it into a mould that has been soaked in cold water.

Improved Rice Blancmange. — Mix three ounces of ground rice and one ounce of arrowroot with one quart of new milk, to which a little cream has been added. Sweeten it to the taste, and flavour it with laurel leaf, cinnamon, or orange essence in the usual way. The addition of the arrowroot makes it eat much more tender and pleasant.

(*d*) **Supper Dish.**—Line a mould with any kind of preserves except raspberry, the more variety the better; soak sponge cake with hot custard, and put it in the middle; then pour over a thin blancmange to bind the whole together; when cold turn it out.

(*e*) **Jaune Mange.**—Put into one pint of water, the night before it is to be made, three-quarters of an ounce of gelatine and a little lemon-peel. The next day put into a pint cup the juice of two lemons and one wine-glass of brandy; fill up the cup with good raisin-wine or sherry; pour these with the mixture into a saucepan, and add to them the yolks of seven eggs well beaten, and sufficient lump-sugar to sweeten it; set it on a slow fire, stirring it till it boils; strain it, and stir it occasionally until nearly cold, when it should be put into the moulds.

Another Jaune Mange.—Dissolve one ounce of isinglass in half a pint of boiling water; beat the yolks of six eggs, and mix them with half a pint of raisin or sherry wine, the juice of a lemon, and sugar to the taste (the peel of the lemon should be rubbed with some of the lumps of sugar, to extract the essence). Stir all well together, and boil ten minutes. Strain, and when nearly cold put it into a mould first dipped in cold water.

Another Jaune Mange.—Stew half an ounce of isinglass in half a pint of water; add the rind of a lemon pared thin, after having rubbed two or three lumps of sugar on it to extract the essence for the jaune mange. When the isinglass is dissolved, squeeze the juice of the lemon into it, and add five table-spoonfuls of white wine. Stir into it by degrees the yolks of three eggs well beaten, and then set it over the fire and stir it one way till it boils. Strain it, and continue stirring till almost cold. Put it in a mould or glasses; when the eggs are mixed with it, sugar must be added to the taste. (This makes a very small quantity.)

(*f*) **Lemon Cream in Shape.**—Dissolve three-quarters of an ounce of Light's extract of calves' feet, or gelatine, in a quarter of a pint of water. Strain it, squeeze the juice of three lemons with the grated peel of one, sweeten with sifted lump sugar, and when you have added about three-quarters of a pint of good cream, or a little more, whisk it well till it becomes a strong froth. Then add the isinglass, cooled sufficiently, but not set; and mix it well. When it begins to set, put it into your mould, and in an hour or two it will be sufficiently firm to turn out. This quantity should fill a quart mould. This cream may be varied by adding before it sets a few dried or preserved cherries, greengages, &c., with a little candied peel, and colour it with a little cochineal.

(*g*) **Lemon Cheese.**—Mix one quart of cream, the juice of three lemons, a little of the peel grated, a large glass of brandy, and powdered sugar to taste; stir all well together, then whisk it to a strong froth, place it in a sieve with a piece of thin muslin in it, and it should then stand till the whey has entirely left it; after this it may be put into a mould, turned out, and ornamented to fancy. The cheese is better if made two days before it is wanted. The muslin should be rinsed through cold water. The above proportions make but a small cheese, but may easily be increased at pleasure.

(*h*) Lemon Sponge.—Take half an ounce of isinglass, dissolve it in a little boiling water, then take the juice of eight lemons, and put sugar to your taste; whisk it together until it becomes a sponge, then wet the mould and put it in; when set turn it out. The mixture ought to be nearly cold to whisk well.

Another Lemon Sponge.—Simmer three-quarters of an ounce of gelatine in a little milk until dissolved; strain and set it to cool; put the juice of three lemons and some sugar to a pint of cream; whisk them well together, pour in the gelatine by degrees, whisk it again, and pour it into the mould.

(*i*) Raspberry Cream, Solid.—Take full half a pound of raspberry jelly or jam, with the seeds taken out; whisk quickly three quarters of a pint of rich cream, to which has been added the juice of a lemon. The jam must be sweetened with sifted lump-sugar, and may be coloured with a very little cochineal; three-quarters of an ounce of "extract of calves' feet," or gelatine, must be previously dissolved in rather less than a quarter of a pint of water, and added to the cream at last. It must be put into the mould as soon as it begins to set. If required to be kept, it should be put into a crockery mould, that the colour may be preserved.

(*j*) Creamed Rice.—Boil a large handful of rice in a pint of new milk till very thick and tender; when about half done, put in half the rind of a small lemon cut very small, and a little nutmeg or laurel leaf. Sweeten to the taste; put it in the moulds, and when quite cold turn it out, and pour over it some thick cream or custard, or place round it some jam or preserved fruit; if wanted for dinner, it should be prepared the previous day.

(*k*) A Shape of Rice.—A teacupful of rice well washed. Put it into a stewpan with half a teacupful of water. Add to it a pint of new milk; let it boil till soft. Turn into a mould till cold, then serve it in a dish with jam or cream.

(*l*) Rice Flummery.—Chop or grate the rind of half a lemon very fine, and pound half an ounce of bitter almonds; mix them together; then take a quart of new milk, a quarter of a pound of loaf sugar, and the same of ground rice, stirring the latter into the milk after the other ingredients have been put in. From the time it begins to boil let it boil for more than ten minutes, stirring it the whole time; then pour it into a mould, and let it stand till quite cold.

(*m*) Italian Cream.—Grate the peel of two lemons, squeeze the juice on the peel, add some sifted sugar—it should be made pretty sweet—then pour over it one and a half pint of cream; stir it well that it may not curdle, beat it with a whisk till it is as thick as batter; put a piece of muslin into a tin mould (to be pierced full of holes), and pour the cream into it. The tin should be placed across a dish, that it may stand hollow. Fill up the mould as the whip subsides.

(*n*) A Charlotte Russe.—Take a plain mould, pour in a little calves' foot jelly to cover the bottom of the mould. When set, take finger biscuits, cut them straight to fit in the mould, and add a little more jelly, coloured with cochineal. Then take a little cream, put it in a basin, add a little lemon juice and loaf sugar pounded, with a glass of brandy flavoured to the taste; then whisk it stiff, melt half an ounce of isinglass *if the mould is large*, if a small one less will do; stir the isinglass in the cream, and pour it in the mould.

1687. Receipts for Custards:—

(*a*) To Make Custard.—Set a saucepan of water to boil, and, while it boils, put all the ingredients for the custard into a jug; viz., a pint of thin cream, five yolks of eggs well beaten (*no* white), sugar, and laurel leaf to the taste. Set the jug in boiling water, and keep stirring till it is the proper thickness. Then take it out, and stuff a clean cloth into the jug to prevent its skinning over, and let it stand till quite cold, and then add some brandy. If in a hurry, the cream and laurel leaves may be made warm before adding the sugar and eggs, but the custard is not quite so thick in this case.

(*b*) Boiled Milk Custard should be made with four eggs to a quart of new milk; flavour with sugar and nutmeg, if liked; pour it boiling over some thin slices of roll or cake, and eat it either hot or cold.

(*c*) A Less Rich Custard.—Mix a quarter of a pint of cream, with a quarter of a pint of milk, leaving a little out to mix with a tea-spoonful of arrowroot; pour the other boiled and sweetened over it; and add the yolks of two eggs, and a little brandy when cold.

(*d*) Vaneille Custard Frothed.—Sweeten and flavour one pint of milk with vaneille. Beat the *whites* of seven or eight eggs to a stiff froth; and, when the milk boils, take out a table-spoonful of the froth, and let it set in the milk, turning it once.

Put it on a sieve to drain, then another, and another. When there is a sufficient quantity, strain the milk and make it into custard in the usual way, eight or nine eggs to a pint of milk. Put the custard, when cold, into a glass dish, and place the frothed whites upon it.

(*e*) Spanish Custard.—To a quart of milk put a little sugar; when boiled, take it off the fire, and shake three table-spoonfuls of arrowroot into it, add half a tea-spoonful of noyau or essence of almonds to it, and about half an ounce of isinglass; set it over the fire again, stirring it one way, then pour it into a mould, which must first be wetted, and when cold turn it out, and stick it with blanched almonds; mix the arrowroot with a little cold milk.

(*f*) Lemon Custards.—Beat the yolks of eight eggs till they are as white as milk; then put to them a pint of boiling water, the rinds of two lemons grated, and the juice sweetened to the taste. Stir it on the fire till thick enough; then add a large glass of rich wine and half a glass of brandy; give the whole one scald, and put it in cups, to be eaten cold.

(*g*) Almond Custard.—Take three bitter almonds, with a little cinnamon, and rub some fresh lemon-peel grated on two ounces of lump-sugar, put them in a pint of milk or cream, and simmer them for a quarter of an hour, then strain and stir till cool. After this mix with the milk the yolks of four eggs well beaten, simmer again until it becomes a thick custard, then add an ounce of sweet almonds beaten smooth with rose water.

(*h*) Tipsy Cake.—Take a stale sponge cake of full size, pierce it with holes, making them with a knitting-pin. Pour over by degrees with a spoon half a pint of raisin-wine, and a wine-glass of brandy mixed. When this quantity is soaked up, which will require the wine to be ladled up from the bottom, stick it thickly over with blanched almonds cut in points or spikes. Just before it goes to table pour over it a thick custard, or whipped cream.

(*i*) Turned-out Custard.—Mix with one pint of sweet milk half an ounce of shred isinglass, the yolks of four eggs well beaten, nine pounded bitter almonds; stir all well over a slow fire till the isinglass is dissolved; strain through a fine sieve or muslin, and pour into a shape. When cold, turn it out.

Sect. 3.—Jellies.

1689. Receipts for Jellies (for directions to run which, see par. 1680):—

(*a*) Calf's Feet Jelly.—Put a set of calf's feet well cleaned into a pan with five quarts of water, and let them boil gently till reduced to two quarts. Then take out the feet, let the jelly become quite cold, skim the fat off clean, and clear the jelly from the sediment. Beat the whites of eight eggs to a froth, then add one bottle of raisin-wine or sherry, squeeze in the juice of from eight to twelve lemons, and the peel of five or six. Sweeten it to the taste (about two pounds and a quarter of loaf sugar). When the stock is boiling, take three spoonfuls of it and keep stirring it with the wine and eggs, to prevent it from curdling; then add a little more stock and still keep stirring, and then put it into the pan; let it boil twenty minutes, and about the middle of the time pour in half a tea-cup of cold water; pour it into a flannel-bag, and let it run into a basin. Keep pouring it back into the bag gently, till it runs clear. Let it settle a little after boiling before pouring it into the bag, and be nearly cold before going into the mould. The eggs and wine must be carefully mixed, or it will curdle.

(*b*) Jelly with Gelatine.—Take two ounces and three-quarters of gelatine dissolved in about a quart of water, four lemons, one pound of loaf sugar, nearly half a bottle of raisin-wine, or a little brandy and less of the wine, as little white of egg as is necessary to clear it, as the egg takes from the stiffness of the jelly. Boil altogether, strain through a jelly-bag, and put into a mould.

(*c*) Ox Feet Jelly.—To three ox feet, made into very stiff stock, allow two pounds and a half of brown sugar, the juice of six lemons, a bottle of table-beer, seven eggs (yolks and whites), a few cloves, about one quarter of an ounce of isinglass, and a teacupful of vinegar. Boil all these ingredients together a quarter of an hour, take the pan off the fire, and let it stand on the fender for *five* minutes before putting it through the jelly-bag.

(*d*) Wine Jellies (made with Gelatine).—Put full three-quarters of an ounce of gelatine in a pint of water the night before making the jelly, with a bit of lemon peel and twelve ounces of sugar; squeeze in a pint measure the juice of four lemons, add a glass and a half of brandy, some orange flavouring or spirit of punch, and fill up with good raisin-wine, whites and shells of two eggs beaten; boil gently till the scum separates, and pass through a jelly-bag.

(*e*) Tapioca Wine Jelly.—Take a quarter of a pound of tapioca, and wash it in two or three waters; then add a pint of cold water, and let it soak twelve hours or more; simmer it in the same water with the rind of a lemon, until it becomes quite clear; then add the juice of the lemon, with wine and loaf sugar to taste, and put in the mould at once.

(*f*) Apple Jelly.—Put one and a half pound of apples, after being pared and cored, in a quart of water; boil them till the apples are in a pulp; put them into a hair sieve to drain, but do not *rub* through. Measure the juice, and to every pint put half an ounce of isinglass (or the extract of calf's feet), the juice and peel of a small lemon, sugar to taste; boil altogether five or ten minutes. Pour it through a flannel bag, and stir till nearly cold before it is put into a mould.

(*g*) Red Apples in Jelly.—Pare and core some well-shaped apples—pippins or golden rennets, if you have them, but others will do; throw them into water as you do them; put them into a preserving-pan, and with as little water as will only half cover them; let them coddle, and, when the lower side is done, turn them. Observe that they do not lie too close when first put in. Mix one or two grains of pounded cochineal or a tea-spoonful of the tincture with the water, and boil with the fruit. When sufficiently done, take them out on the dish they are to be served in, the stalks downwards. Take the water and make a rich jelly of it with loaf sugar, boiling the thin rind and juice of a lemon. When come to a jelly, let it grow cold, and put it on and among the apples; cut the peel of the lemon in narrow strips, and put it across the eye of the apple.

(*h*) Lemon Jelly.—Dissolve one ounce of isinglass in a pint of water, then add one pound of lump sugar, the juice and rind of two lemons; let it boil ten minutes after the ingredients are in; strain it into a mould.

(*i*) Orange Jelly.—Peel lightly six oranges, and throw the peel into a little water, which lay on the corner of a stove without allowing it to boil, lest it should taste too bitter. Cut the oranges in two, have a lemon squeezer and silk sieve to squeeze the oranges (which dip in water to prevent waste); squeeze the oranges into an earthen pan, and pour into it through the sieve the infusion of peel. Next clarify a pound of sugar or so, and then pour in the orange juice. The heat of the sugar will clarify the jelly. Do not let it boil, but as soon as you perceive a yellow scum skim it and pour the jelly into a bag. Next mix some melted isinglass, either hot or cold. This jelly must not be made too firm. If the oranges are too ripe, mix a little lemon-juice to make them more acid. Eighteen oranges are requisite to make a good jelly. Lemon jelly may be made in the same way.

Another Way.—To two quarts of calf's feet or cow-heel stock made stiff, add the juice of twelve China oranges and the peel of six, the juice of two lemons and peel of one; pare the oranges and lemons very thin. Boil altogether for half an hour, and sweeten to the taste. Strain through a piece of muslin.

Another Way.—Boil two ounces of isinglass in a pint of water, three-quarters of a pound of loaf sugar in another pint of water. Squeeze eight oranges, add the juice and rind of one lemon, and grate the peel of some of the oranges. Mix all the ingredients together, and let it boil a quarter of an hour. Strain it through a flannel bag and put it into the mould.

(*j*) Cherry Jelly.—The best method of making cherry jelly consists in clarifying the sugar, and when it has been skimmed properly and boils, throw the cherries into it; take them off the fire, and, when the decoction is cold, throw in a little liquid clarified cold isinglass. Squeeze three or four lemons into it. Strain through a bag, and put it into an earthern mould.

(*k*) Punch Jelly.—Take a pound of loaf sugar, one and a half ounce of isinglass, the juice of four Seville oranges, and four lemons. a wine glassful of brandy, and one of rum. Melt the isinglass in a pint or more of boiling water, then strain it quite hot through a fine sieve upon the punch. Stir it, and put it in a mould.

Another Punch Jelly.—Dissolve an ounce and a half of isinglass in a pint or more of water with the peel of a lemon. To a quarter of a pint of brandy, and half that quantity of rum, add the juice of two lemons, sweeten it with a pound and a quarter of loaf sugar. Strain the water in which the isinglass has been dissolved through a sieve upon the punch, then place it on the fire to heat, not to boil. Let it stand to settle, and pour it into the mould.

(*l*) Raspberry Jelly.—Dissolve one ounce of gelatine in half a pint of water, add three quarters of a pint of syrup (with a spoonful of lemon juice, or fifteen grains of tartaric acid), boil and skim, and pour it into the mould.

(*m*) Excellent Red Jelly.—Dissolve one ounce of isinglass in three-quarters of a pint of water, and add the eighth part of the white of an egg well beaten. When nearly dissolved put in one pound of loaf sugar broken, and a third of a spoonful of cochineal powdered. Ten minutes before taking off the fire, put in the grated rind of three lemons. Strain it through muslin, and add a cupful of Madeira, or any other good white wine, and the strained juice of four lemons. If it looks thick, give it one boil up. Let it cool before it goes into the mould. The pan should be kept covered all the time it is boiling.

Sect. 4.—Stewed Fruits.

1690. To Stew Normandy Pippins.—

Soak a dozen pippins in a quart of cold water, and let them stand all night. Strain off the water, and add to it six ounces of powdered loaf sugar, six cloves, a glass of Madeira or light wine, and a little thin lemon-peel cut in very narrow pieces; boil it up to a syrup. Put in the apples, and let them simmer very gently till tender. If tied down in a jar, they will keep good a fortnight.

(*a*) STEWED APPLES, CALLED BLACK CAPS. Take large French pippins, or golden rennets, cut them in half, and lay them with the flat side downwards in a dish. Put a little currant wine and some fine sugar over them, and put them into a quick oven for half an hour. Boil some currant wine, or other sweet wine, with a little lemon-peel cut in long thin pieces, a small quantity of gelatine, a little lemon-juice, and some sugar together, till the gelatine or isinglass is dissolved; put the apples in a dish, and pour it over them. The jelly should be set before they are sent to table.

(*b*) STEWED APPLES.—Pare evenly any good boiling apples, of a pretty large size; take out the core with a scoop, and put them into a stewpan, with water enough to cover them. Add a little sugar, lemon-peel, and juice, if the apples require it. Stew them gently till quite tender, taking care not to break them. Take them out of the water, to which add sugar enough to make a rich syrup, and a peach leaf or teaspoonful of capillaire; boil it, and when as thick as cream, pour it in the dish round the apples. A little colouring may be given to one side of the apple with cochineal, or the juice of red beet-root.

(*c*) TO SCALD CODLINS.—Wrap each in a vine-leaf, and pack them close in a stewpan; and when full, pour as much water as will cover them. Set it over a gentle fire, and let them simmer slowly till done enough to take the thin skin off when cold. Place them in a dish, with or without milk, cream, or custard; if the latter, there should be no ratafia. Dust fine sugar over the apples.

(*d*) TO STEW PEARS.—Pare and halve the fruit, and lay them in a bright tin, or enamelled iron saucepan. Then strew over them some lump sugar, and a few cloves; pour over them some water (not more than a teacupful for a large quantity of pears). Fill the saucepan with the parings, laid closely in layers, and cover with the lid. Let it boil gently till the pears are tender, and then either boil gently or simmer for five or six hours, till the colour is a deep crimson. When done, and the pears are taken out, add a lump of sugar, previously well rubbed on the rind of a lemon, and a little lemon juice to the syrup. Give it a boil up, and pour it a few times over the pears to give them the same flavour. Should there not be plenty of lump sugar, the pears are much longer in acquiring their proper colour.

(*e*) STEWED PEARS (*another Receipt, less rich*).—After paring and halving one pound of pears, put them into a well-lined pan with three ounces of lump sugar, two-thirds of a pint of water, and a few cloves. Stew until quite tender.

(*f*) BAKED PEARS.—These need not be of a fine sort; some taste better than others, and often those that are least fit to eat raw. Wipe, but *do not* pare, and lay them on tin plates, and bake them in a slow oven. When soft enough to bear it, flatten them with a silver-spoon. When done through, put them on a dish. They should be baked three or four times, and very gently.

CHAP. XV.

FRENCH COOKERY, AND MISCELLANEOUS RECEIPTS.

SECT. 1.—FRENCH COOKERY, AS COMPARED WITH THE ENGLISH SCHOOL.

1691. For many years our opposite neighbours have looked down upon the cookery of this country with the greatest contempt, considering it in a barbarous condition. This low opinion may have been well founded in the last century, but I much question whether at present we may not have it in our power to return the compliment; though I am ready to admit that we owe a great deal to the French for our existing knowledge of the art of cookery. I am not, however, attempting to settle the question depending upon the relative inventive powers of the two nations, but that connected with the *present modes* of preparing their food. Let any one sit down to a dinner cooked by a first-rate French cook, and say if it is not true that all the dishes worth eating are cooked on English principles, although, perhaps, dignified with high-sounding French names; while, on the other hand, the veritable French dishes, however beautiful and tempting to the eye they may be, are, when tasted, by no means of first-rate flavour. I am not now speaking from my own particular experience, because I know that the taste of an individual is no criterion by which to judge of those belonging to the multitude; but from close observation I should decidedly say, that the large proportion of the English, *who have the choice of both kinds*, prefer genuine English dishes to those of French preparation. Of course, it will happen that those who have only an occasional opportunity of gratifying their fancy for novelty by partaking of strange fare, profess to like what to them is a rarity; but this is no rule to guide in the choice, and it is only needful in reality to consider whether the French have discovered any methods of cookery more *economical*, more *wholesome*, or more *palatable*, than ours. Here issue must join, and I boldly maintain that they have not. I know full well that the French can, and do, live upon less than the English in point of animal food; but they make up for this abstinence by indulging largely in salads and vegetables; and in bulk, as well as most probably in weight, of food they equal, if they do not go beyond the usual allowance of the English. But do they, or do they not, cook this said animal food in a more wholesome mode than we do? If it is maintained that they do, I must ask in what way? Is it in their soups? We have the same. Is it in their fish? I maintain that plain-boiled turbot is more wholesome than a *vol-au-vent de turbot*. With regard to their *entrées* and *entremets*, they are only other names for our side and corner dishes, confectionery, and sweets—none of which are certainly to be recommended for their suitability to the stomach. If these facts are really what I say, then French cookery can only claim a superiority in point of flavour; and here the matter cannot be settled, since every one will judge for himself. But, in every other respect, I maintain that, with the aid of the old English cook of the early part of this century, we may live quite as economically, and in a *more* wholesome way than even by the aid of Soyer himself. To the French system of frying I have given due credit, under the section treating of that department; but beyond that I know of little real improvement which they can claim; excepting, perhaps, the mode of boiling their fresh beef (*bouilli*), which would not bear to be presented in English style. The plan, however, is a good one, and might certainly be adopted in this country with advantage. The English mistake has been not so much in the poverty of their cookery, as in the abuse of its abundance of good things. If fine meat were more plentiful in Paris, we should see it more frequently produced *au naturel*; but, with their tough and stringy beef and mutton and melancholy-looking veal, they are compelled to have recourse on all occasions to those dishes which we only need employ occasionally. English receipts for stews, hashes, harricots, fricassees, &c., originally French though they may be, are numerous enough, and, when well made, equal in flavour to many of the much-vaunted modern French entrées; but when ill-made, the fault lies not in the cookery, but in the cook, who is thought nothing of if she confines her attention to English dishes, and consequently neglects them in the attempt to reach beyond her limited powers. Do we ever see a Frenchman refuse a fine haunch of mutton or venison when he has the chance? It is true, that he requires a differently-flavoured sauce to that which is the customary one in this country; but it is not against these that the complaint is made, but against our barbarous method of roasting and boiling *joints*. Plain melted butter may be his abomination, and so it is of many Englishmen; nevertheless, it is the foundation in France, as well as in England, of very many good sauces. What

I wish to have understood by those who now submit to be called barbarous in cookery, is the fact, that, except in making too free use of our splendid butcher's meat, we are not in point of *science* behind the French. Our *principles of cookery* are quite as well founded as theirs (saving always the aforementioned fryingpan); and we have no reason to submit to the alleged superiority which they claim. They are fonder of acids than we are, but that is no scientific discovery. They also indulge in a greater variety of flavours than we do, but that, again, is no improvement in science, for it only tempts the stomach to do that which the Englishman is already too prone to do without—namely, to eat too much. I am, therefore, at a loss to know in what the pre-eminence consists; and I can only come to the conclusion that it is undeserved. The English of the last century were bigotted in thinking themselves superior to all other nations, but in the latter half of this they seem determined to run into the opposite extreme, and come to the conclusion that they are only fit to wash the dishes for their neighbour's *chefs de cuisine.*

1692. The argument which I have maintained in the preceding paragraph is still farther supported by the fact, that almost all the French terms used in their cookery are easily translated into English by synonyms, showing that they have had a previous or parallel existence, and been named in this country as well as in France. If it were otherwise, instead of being merely adopted here by the cook and his patrons, they would become part of the English vocabulary, in the same way as many French words in other departments, such as *envelope*, *ennui*, *hauteur*, &c.

VOCABULARY OF FRENCH COOKING TERMS TRANSLATED.

Atelets, small silver skewers.
Assiettes, dishes with four compartments, for the use of the cook (old English).
Assiette volante, dish handed round.
Au naturel, plain.
Bain-marie, a water-bath.
Beignet, a fritter.
Blanc, a white broth.
Blanquette, a kind of fricassee (French only).
Braising, a peculiar kind of stewing (long used in England, see page 466).
Boudin, a French dish, formed of expensive forcemeats, poached and broiled.
Bouilli, boiled *fresh* beef, peculiar to France.
Bouillon, broth.
Buisson, a high standing dish of pasty.
Casserole, a stewpan.
Casserole, a rice-crust.
Compôte, a *mixture* of fruits, also a white *mixture*, or ragout of small birds or pigeons.
Compotier, lowest dish to hold the compôte.
Court bouillon, a preparation of wine, &c., in which fish is boiled.
Consommé, a strong gravy (clear).
Coulis, cullis, or rich brown gravy.
Croustade, a hollow crust of bread formed to hold minces, &c.
Croquettes, savoury minces.
Crouton, a sippet fried.
En papillotte, in paper (oiled).
En couronne, in the shape of a crown.
Emincé, minced.
Entrées, corner or side dishes served with the first courses.
Entremets, ditto with the second and third courses.
Feuilletage, puff paste.
Friture, fryingpan.
Farce, forcemeat.
Fricandeau, a stew of veal (see Fricandeau).
Gateau, cake.
Gras, made with meat.
Gratiner, to make crisp, to grill.
Liaison, a mixture of cream and egg to thicken white soup.
Maigre, without meat.
Marinade, a liquor prepared with vinegar for boiling fish, &c.
Matelote, a kind of stew of fish.
Meringue, a very light cake, made of sugar and white of egg beaten up.
Miroton, a meat dish (see Miroton).
Nouilles, a paste made of egg and flour.
Noix de veau, the part of the fillet of veal near the udder.
Paniéres, dressed with bread-crumbs.
Passer, to fry lightly.
Pigné, larded on the surface only.
Poêlée, a liquor concocted to boil fowls in.
Pot-au-feu, an economical dish (page 475).
Potage, broth or soup.
Purée, meat, fish, &c., pounded and pressed through a purée presser and sieve to remove the lumps.
Quenelles, a kind of forcemeat.
Rissoles, small fried pastry, both savoury and sweet.
Ragôut, a rich kind of stew or sauce with sweetbreads, &c.
Roux, a thickening of flour or butter.
Salmi, a hash of half-dressed game.
Sauté, fried in the French style (page 463).
Singer, to flour the stewpan.
Tamis, a strainer or sieve of woollen canvas.
Timbale, a pie made in a peculiar mould.
Tourte, a species of tart.
Vanner, to take up a sauce with a spoon in a peculiar manner.
Velouté, a rich sauce.
Vol-au-vent, a raised crust of ornamental puff paste.

After carefully examining the above list, which, I believe, comprehends nearly all the terms used in the French *cuisine*, it is ridiculous to attempt to maintain that, except in the arrangement of the letters, they have anything peculiar. Their words are composed of different changes of the members of the alphabet, but they are nearly all represented in our tongue by corresponding ones as good as theirs; and it might be just as well maintained that a fine roasted Norfolk turkey is improved by giving it the name of *dindon roti*, as to allege that *potage* is better than soup, or a *vol-au-vent* more scientific than a patty. By all means adopt improvements, whether French, German, Italian, or Russian; but do not take the bad with the good; nor is it necessary to despise our own really wholesome and appetising dishes because they are our own. I fully admit that the French, as individuals, are more inventive than we are, and generally take to cookery better than the English, but that their national cookery is superior to ours, I as fully deny.

SECT. 2.—MISCELLANEOUS COOKERY RECEIPTS.

1693. RECEIPTS FOR DRESSING EGGS:—

(*a*) PLAIN.—Boil some water in a small saucepan; put in the eggs carefully with a spoon, taking the time by a clock or watch; boil for two minutes and a half to three and a half, according to the taste of the consumer. The first mentioned time scarcely turns the white all through, while the last almost hardens the yolk. Three minutes boiling will be preferred by most people, as the whites are then just set, and the yolks a little thickened in consistence. If the weather is very cold, it is better to warm the eggs a little before boiling them, or they are very apt to crack from the sudden expansion by heat.

(*b*) TO POACH EGGS.—Set a stewpan of water on the fire; when boiling, slip an egg, previously broken in a cup, into the water; when the white looks done enough, slide an egg-slice under the egg, and lay it on toast and butter, or spinach. As soon as enough are done, serve hot. If not fresh laid, they will not poach well, and without breaking. Trim the ragged parts of the whites, and make them look round.

(*c*) BUTTERED EGGS, OR EGG TOAST.—Beat four or five eggs, yolk and white together, put a quarter of a pound of butter in a basin, and then put it in boiling water, stirring it till melted; pour the butter and eggs into a saucepan; keep a basin in the hand, just holding the saucepan in the other, over a slow part of the fire, shaking it one way, as it begins to warm; pour it into the basin and back; then hold it again over the fire, alternately stirring it constantly in the saucepan, and pouring it into the basin, more perfectly to mix the egg and butter, until they shall be hot without boiling. Servé on toasted bread, or in a basin, to eat with salt fish, or red herrings.

(*d*) SCOTCH EGGS.—Boil hard five pullets' eggs, and without removing the white, cover completely with a fine relishing forcemeat, in which let scraped ham, or chopped anchovy, bear a due proportion. Fry of a beautiful yellow brown, and serve with a good gravy in the dish.

(*e*) TO BOIL EGGS HARD.—Boil them ten minutes, moving them gently to change the under side, and put them by to get cold.

1694. BREAKFAST DISHES:—

(*a*) OATMEAL PORRIDGE (*a genuine Scotch receipt*).—Put as much water as will make as much porridge as is wished into a saucepan, let it boil, then take a handful of meal in the left hand, letting it fall gently into the water, while stirring the meal and water quickly round with the right, with a wooden stirrer or spoon; do this till it is the thickness of thick gruel, then salt to the taste; let it boil for ten minutes, add a little more boiling water, and boil it other five minutes, which makes it quite smooth, and very digestible (boiling it well is the great secret for making it digestible and nourishing for invalids). It is poured out in pudding dishes for each member of a Scotch family, and they dip each spoonful into a jugful of milk, and thus make a hearty and nourishing breakfast. The poorer class of children often have it for their evening meal too, and in this way it forms the principal food for Scotch children, who seldom ever tire of it till they grow up.

(*b*) RICE PORRIDGE.—On half a pound of rice pour three quarts of boiling water; let it swell till it becomes quite a jelly. Add one quarter (or half) a pound of oatmeal, mixing it first with cold water; stir it well together, add one ounce of onions chopped fine, half an ounce of bacon fat, butter, or lard, salt and pepper to taste; boil all together, stirring all the time.

(*c*) FLOUR MILK is made by mixing up a table-spoonful of wheat-flour in water to a thin paste, then stirring it into a pint of boiling milk till it thickens. It may be eaten with sugar or treacle.

(*d*) RICE AND SAGO MILKS are made by washing the grains nicely, and simmering with milk over a slow fire till sufficiently done. The former sort requires lemon, spice, and sugar; the latter is good without anything to flavour it.

(*e*) BREAD AND MILK.—Cut or break stale bread into fragments, then boil in milk for a quarter of an hour.

(*f*) Frumety.—Boil a quarter of a pint of wheat for three or four hours, then add one quart of milk, with two spoonfuls of flour mixed with it, two eggs, three parts of a small teacupful of raisins and currants, a little lemon-peel and cinnamon. Boil for a quarter of an hour, and serve.

1695. Preparations of Milk —

(*a*) Curds and Cream.—Put three or four pints of milk into a pan a little warm, and then add rennet or gallino. When the curd is come, lade it with a saucer into an earthen shape perforated, of any form you please. Fill it up as the whey drains off, without breaking or pressing the curd. If turned only two hours before wanted, it is very light; but those who like it harder may have it so, by making it earlier, and squeezing it. Cream, milk, or a whip of cream, sugar, wine, and lemon, to be put in the dish, or into a glass bowl, to serve with the curd.

Another Way.—To four quarts of new milk warmed put from a pint to a quart of buttermilk strained, according to its sourness; keep the pan covered until the curd is of firmness to cut three or four times across with a saucer; as the whey leaves it, put it into a shape, and fill up until it is solid enough to take the form. Serve with plain cream, or mixed with sugar, wine, and lemon.

(*b*) Gallino Curds and Whey, as in Italy. Take a number of the rough coats that line the gizzards of turkeys and fowls; clean them from the pebbles they contain; rub them well with salt, and hang them to dry. This makes a more tender and delicate curd than common rennet. When to be used, break off some bits of the skin, and put on it some boiling water; in eight or nine hours use the liquor in the same way as other rennet.

(*c*) Buttermilk, if made of sweet cream, is a delicious and most wholesome food. Those who can relish sour buttermilk, find it still more light; but it is not generally liked. Buttermilk, if not very sour, is also as good as cream to eat with fruit, if sweetened with white sugar, and mixed with a very little milk. It likewise does equally for cakes and rice-puddings, and therefore it is economical to churn before the cream is too stale to make buttermilk fit for nothing but to feed pigs.

(*d*) London Syllabub.—Put a pint and a half of port or white wine into a bowl, with nutmeg grated, and a good deal of sugar, then milk into it near two quarts of milk, frothed up. If the wine is not rather sharp, it will require more for this quantity of milk.

(*e*) Staffordshire Syllabub.—Put a pint of cider, and a glass of brandy, sugar, and nutmeg into a bowl, and milk into it; or pour warm milk from a large teapot some height into it.

(*f*) Somersetshire Syllabub.—In a large china bowl put a pint of port, and a pint of sherry or other white wine; sugar to taste. Milk the bowl full. In twenty minutes' time cover it pretty high with clouted cream; grate over it nutmeg, put pounded cinnamon and nonpareil comfits.

(*g*) Devonshire Junket.—Put warm milk into a bowl; turn it with rennet; then put some scalded cream, sugar, and cinnamon on the top, without breaking the curd. Many people add a little brandy and rum in equal proportions.

(*h*) Posset Syllabub.—Mix a quart of thick cream with one pound of lump sugar, and a pint of white wine; rub a few lumps of sugar upon the rind of two or three lemons to extract the essence; and pour upon them the juice of three lemons; add this to the cream, and whisk it one way for half an hour or till thick.

(*i*) Everlasting Syllabub.—Take half a pint of thick cream, half a pint of white wine, a little brandy, the juice of a small lemon, and the essence of the rind rubbed off upon lumps of sugar and added to the juice, half a pound of lump sugar sifted; mix the whole well together, and whisk until quite thick.

(*j*) Butter-milk Curds.—Take three pints of butter-milk and put it in a broad basin; take a pint and a half of new milk, and boil it with half a nutmeg till it relishes; pour it hot on the butter-milk, and let it stand two or three hours, till the whey is cleared from the curds; put it on a thin cloth, and let it hang till the whey is all drained from it. Serve it up with cream, sugar, and grated nutmeg.

1696. Receipts for Dressing Cheese:—

(*a*) To Pot Cheese.—Take two pounds of cheese, one of Cheshire and one of Gloucester; to this add three spoonfuls of mountain wine and two spoonfuls of made mustard; beat all these together in a marble mortar, and then put it into pots for use.

Another Way.—Cut and pound four ounces of Cheshire cheese, one ounce and a half of fine butter, a tea-spoonful of white pounded sugar, a little bit of mace, and a glass of white wine; press it down in a deep pot.

(*b*) Toasted Cheese to Come up after Dinner.—Grate three ounces of fat Cheshire cheese, mix it with the yolks of two eggs, four ounces of grated bread, and three ounces of butter; beat the whole well in a mortar, with a dessert-spoonful of mustard, and a little salt and pepper. Toast some bread, cut it into proper pieces, lay the paste as above thick upon them into a Dutch oven, covered with a dish, till hot through; remove the dish, and let the cheese brown a little. Serve as hot as possible.

(*c*) MELTED CHEESE.—Take two ounces each of good Cheshire and of Parmesan cheese, grate them, and add about double the weight of each in beaten yolks of eggs and melted butter; mix them well together, add pepper and salt to the taste, and then put to it the white of the eggs, which have been beaten separately; stir them lightly in, and bake it in a deep dish, filled but half full, as it will rise very much. Serve when quite hot.

(*d*) WELSH RABBIT.—Toast a slice of bread on both sides, and butter it; toast a slice of Gloucester cheese on one side, and lay that next the bread, and toast the other with a salamander; rub mustard over, and serve very hot, and covered.

(*e*) CHEESE TOAST.—Mix some fine butter, made mustard, and salt into a mass; spread it on fresh-made thin toasts, and grate or scrape Gloucester cheese upon them.

(*f*) ANCHOVY TOAST.—Bone and skin six or eight anchovies; pound them to a mass with an ounce of fine butter till the colour is equal, and then spread it on toasts or rusks.

Another Way.—Cut thin slices of bread into any form, and fry them in clarified butter; wash three anchovies split, pound them in a mortar with some fresh butter, rub them through a hair-sieve, and spread it on the toast when cold; then quarter and wash some anchovies, and lay them on the toast. Garnish with parsley or pickles.

1697. VARIOUS CONFECTIONERY RECEIPTS FOR COMMON USE:—

(*a*) FRUIT DROPS OF LEMON JUICE.—Mix a quantity of lemon juice with sifted sugar, nearly thick enough for a spoon to stand upright in. Put it in a deep pan and make it quite hot on the fire, stirring it all the time, but do not let it come to a boil, then mix in a small quantity more sugar. Warm it, then chalk the spout of the pan, and with a small stick drop it on tin or pewter plates in small drops. When cold, take them off the plates, and put them in the stove or sieves to dry.

(*b*) GINGER DROPS, A GOOD STOMACHIC.—Beat two ounces of fresh candied orange in a mortar with a little sugar, to a paste; then mix one ounce of powder of white ginger, with one pound of loaf sugar. Wet the sugar with a little water, and boil altogether to a candy, and drop it on paper as for lemon drops.

(*c*) PEPPERMINT DROPS.—Pound and sift four ounces of double-refined sugar, beat it with the whites of two eggs till perfectly smooth; then add sixty drops of oil of peppermint, beat it well, and drop on white paper, as above, and dry at a distance from the fire.

(*d*) RATAFIA DROPS.—Blanch and beat in a mortar four ounces of bitter, and two of sweet almonds, with a part of a pound of sugar sifted, then add the remainder of the pound of sugar, and the whites of two eggs, making a paste; of which put little balls, the size of a nutmeg, on wafer-paper, and bake gently on tin plates.

(*e*) TOFFY.—Mix one pound of coarse sugar, half a pound of treacle, a little butter, one and a half tea-spoonful of ginger, the same of mixed spice, let it boil for half an hour, grease a pewter plate and pour it in, then let it cool.

(*f*) EVERTON TOFFY.—Mix one pound of sugar, a quarter of a pound of treacle, half a pound of butter, with the rind of half a lemon; boil all over a slow fire an hour, and pour it upon tins well buttered.

(*g*) BARLEY SUGAR.—Dissolve a pound and a half of lump sugar in half a pint of water, with the white of half an egg; when it is at candy height (see page 393), add a tea-spoonful of strained lemon-juice, and boil it quickly till it recovers its previous condition. Pour it over a marble slab, and when it becomes stiff, cut it into strips, and twist it.

1698. TO PREPARE FRUIT FOR CHILDREN IN A MORE WHOLESOME WAY THAN IN PIES AND PUDDINGS.—Put apples or pears, sliced, plums, currants, gooseberries, &c., into a stone jar, and sprinkle as much Lisbon sugar as is necessary among them; set the jar on a hot hearth, or in a saucepan of water, and let it remain till the fruit is perfectly done. Slices of bread, or rice, may be either stewed with the fruit, or added, when eaten; the rice being plain boiled.

MUSHROOMS TO POT.—Take large buttons, wipe them quite clean, and cut the stalks even; put them into a stewpan and pepper and salt them well; then put them over a fire and stew till all the liquor is dried up (just before the liquor is dried, put a small piece of butter into them). Pot them when hot, and let each pot be large enough for a dish, as they will not keep after being opened. When cold, put a thin coating of butter and a thick one of mutton suet; tie a bladder over the pot. When dressed, put them into hot water, and change it twice, then dress them as for stewed mushrooms.

CHAP. XVI.

COOKERY FOR THE POOR.

SECT. 1.—REMARKS.

1699. THE OBJECT OF THIS CHAPTER is twofold—1st, to enable those who are anxious to benefit their poorer neighbours to cook for them, occasionally, soups, puddings, &c., which may be nourishing and wholesome, and yet their cost may be so trifling, as not to be felt in a moderately large establishment; and, 2nd, to afford such information as may be imparted by oral teaching, on the kinds of cookery and general management of food most suitable for those who are obliged to live upon a very small weekly stipend. Economy is the key-stone of each; but it is very differently applied in the one from the other. Thus, many things in a large establishment are useful to the poor man, and yet he cannot procure them by purchase, even if so disposed. Such are the boilings of meat, what are called "broken victuals" or "scraps," and many other things which are not made use of by those who can afford to despise them; but which to the badly-fed child or adult are positive luxuries, because they consist of articles which their systems call for in the most urgent manner. "Waste not what your neighbours want," is an adage which the rich man should treasure up and act upon; and if so, many a cottage which is now rarely gladdened with the sight of animal food, would be made comfortable at times, if not always so.

SECT. 2.—THE RICH MAN'S SUPERFLUITIES.

1700. BOILINGS. — The cook should be charged to save the boilings of every piece of meat, ham, tongue, &c., however salt; as it is easy to use only a part of them, mixed with an equal or double quantity of fresh water, and, by the addition of more vegetables—the bones of the meat used in the family—the pieces of meat that come from table on the plates—and rice, Scotch barley, or oatmeal, there will be some gallons of nutritious soup two or three times a week. The bits of meat should be only warmed in the soup, and remain whole; but the bones should be boiled in the digester till they yield their nourishment. If the things are ready to put in the boiler as soon as the meat is served, it will save the fresh fire for second cooking. Should the soup be poor of meat, the long boiling of the bones, and different vegetables, will afford better nourishment than the laborious poor can obtain; especially as they are rarely tolerable cooks, and have not fuel to do justice to what they buy. In every family there is some superfluity; and if it is prepared with cleanliness and care, the benefit will be very great to the receiver, and the satisfaction no less to the giver. In times of scarcity, ten or fifteen gallons of soup could be dealt out weekly, at an expense not worth mentioning, even though the vegetables were bought; and if in any village containing ten gentlemen's houses the quantity of ten gallons were made in each, there would be a hundred gallons of wholesome and agreeable food given weekly for the supply of forty poor families, at the rate of two gallons and a half each.

1701. REFUSE VEGETABLES.—Take turnips, carrots, leeks, potatoes, the outer leaves of lettuce, celery, or any sort of vegetable that is at hand; cut them small, and throw in to any quantity of boilings, with the thick part of peas, after they have been pulped for soup; or grits, or coarse oatmeal, which have been used for gruel; or bread-crumb and refuse pieces of bread.

1702. SKIMMED MILK.—Where cows are kept, a jug of skimmed milk is a valuable present, and always a very acceptable one where there are children; while in a gentleman's house it is only fit for pig's wash, or at all events it is used for that purpose, wherever cows are kept sufficient to make butter for the family.

1703. A CHEAP PUDDING.—When the oven is hot a large pudding may be baked, and given to a sick or young family; and when made as follows, the trouble and cost are little:—Into a deep tin or pan put half a pound of rice, four ounces of coarse sugar or treacle, two quarts of skim milk, and two ounces of dripping; set it cold in the oven. It will take a good while, but is an excellent solid food.

1704. CRUMB PUDDING. — Save all the crumbs left upon the cloth during the week, add to these any waste pieces of bread. Put them into a basin with two ounces of treacle mixed up with them. Soak them in enough water to make them swell. Then tie them in a cloth in the usual way, and boil half an hour. Hundreds of poor children would be glad of such a pudding.

1705. A SOPPED TOAST. — A very good meal may be thus easily made:—Cut a very thick upper crust of bread, and put it into the pot where salt beef is boiling and nearly ready; it will attract some of the fat, and, swelled out, will be no unpalatable dish to those who rarely taste meat.

1706. A SAVOURY BAKED DISH. — Put a

pound of any kind of meat cut in slices; two onions, two carrots, ditto; two ounces of rice, a pint of split peas, or whole ones, if previously soaked, pepper and salt, into an earthen jug or pan, and pour on two quarts of water. Cover it very close, and bake it with the bread.

1707. **Good, but Plain Plum Pudding, suited for Christmas, or any Festive Occasion.**—Mix three-quarters of a peck of flour, the crumbs of six large loaves, eight pounds of suet, six pounds of raisins, six pounds of currants, ten eggs, three pounds of brown sugar, one ounce of allspice, a quart of old ale, a bottle of raisin wine, and milk enough to make it of a proper consistence. Whether made into two puddings or more, it should be boiled for full twenty hours; if made some little time previously, it may be hung up in a dry place, and boiled again a few hours before serving, it will be all the better.

Sect. 3.—The Poor Man's Cookery.

1708. Under this head will be included directions suitable for the poor man's guidance, or rather for that of his wife, in conducting his humble cookery. I have already observed, that experience and instinct are in the main pretty sure guides to man in selecting his diet; but there are numberless exceptions to this rule, and none more marked than in the case of the poor man. With the pittance which he has at his command, he is too often tempted to spend too much in ways which do not bring him the best return for his money. Thus, he will buy nine-pennyworth of *fine white* bread in preference to eight of a superior quality in reality; but being more brown in appearance, and not patronized by his employers, he fancies it is not as good, and decides against it without giving it a trial. Again, in his desire for present happiness (or freedom from care the sensation should perhaps be called) he spends a day's wages in beer or gin, which would if laid out in meat make all the difference to him for the next week between the food which his system requires and that which he can then procure. Lastly, the poor man in his ignorance is led to mistake the promptings of his palate for an infallible guide, and thus is tempted to buy *fat* bacon or mutton to eat with his potatoes instead of such lean parts as will supply the nitrogen in which they are deficient. It is chiefly in this neglect of azotized food that the poor are mistaken, and the reason is that its effects are not immediate, like those of alcoholic stimulants, nor is it in small quantities so full of flavour as fried fat, and therefore it is no wonder that both the one and the other should be preferred to it. Besides, these reasons for choosing certain kinds of food peculiar to himself, it is unfortunately a fact that the labouring-man and his family seldom have their stomachs overloaded with food, and consequently it is of no importance to them to avoid that which is in itself too bulky; potatoes, therefore, are less objectionable in large quantities than they are to the overloaded stomach. But if with their potatoes, which contain very little nitrogen, they could mix lean meat or its juice, together with some gelatine, it would be of far more benefit than the fat which they select with so much care. With bread, abounding in nitrogen, fat bacon or mutton is the proper mixture, or with beans, peas, or cabbage; but with potatoes—milk, buttermilk, gravy, or meat should be the proper flavouring material. It is of great importance, whenever the educated man is anxious to benefit his poorer neighbours, that these facts should be well-known, so that he may be able to afford useful advice in the selection of the proper kinds of food. It may be here as well to repeat the various articles of food suited to the poor man, and to give them under the respective heads of *azotised* and *non-azotized*, so that he may have recourse to any of the former list to supply the deficiency in the azote of the latter, or *vice versâ*.

Various Kinds of Cheap Food Suitable to the Poor Man.

Azotized.	Deficient in Azote.
Bullock's, pig's, calf's, or sheep's liver, melt, or kidney.	Potatoes.
Pig's blood for black-puddings.	Rice.
Inferior pieces of beef.	Fat (dripping).
Sheep's trotters.	Lard.
Sheep's head and pluck.	Bacon fat.
Cheap fish.	
Peas and beans.	
Mushrooms.	

Cabbages, cauliflower, brocoli, oatmeal, bread, milk, and buttermilk, may be considered as containing a proper proportion of the four elements, and merely requiring any flavouring matter mixed with them to suit the palate. It will therefore be necessary to adapt the diet in this list, so that, for instance, potatoes, as the cheapest of all foods, may be mixed with some one or other articles in the opposite list, while peas and beans again require the addition of dripping, lard, or bacon, to make them in the same way suitable to the demands of the system. In the first place, then, we will see how liver, pig's blood, ox cheek, or sheep's head and trotters, may each be cooked to advantage, so as to make a good and cheap meal, with *potatoes* or *rice*, for the poor man. It must be remembered, that we have not only to consider what is the *best* food for the labourer, but what is the *best for his money*, and if this precaution is neglected, it only leads to his rejecting other, and perhaps, really useful advice, by the idea that the adviser is not practically acquainted with his necessities. In a very well intended little book on Domestic Economy, lately published by one of her Majesty's Inspectors of Schools, the first item given under the head of "Recipes for Economical Cookery," is a *cheap* mode of making Irish stew, in which "good beef sausages and a little dripping" are ordered with potatoes to replace a neck of mutton, which is the usual animal part of the concoction. Now, every one knows that beef sausages are sold at nearly, or in some places quite, double the price of necks of mutton, and the coarse parts of beef, which would also answer better for the stew than the expensive sausages; so that a stew made of them would, instead of being economical, be quite the reverse, and such a recommendation would at once condemn all the consecutive pieces of advice in the judgment of the person who tried the receipt, although they might be, and are, really useful. But with this caution, the following savoury compounds may be adopted, which shall, at the same time, be as cheap as such messes can be made, provided they contain sufficient nourishment of both kinds.

(*a*) Bullock's Liver Fried with Potatoes.—This dish requires very peculiar management, as it is very apt to be made hard in the dressing. Two or three pounds of liver, *in one lump*, are to be stewed in a very small quantity of water, for at least three hours, then take it out and stew an equal quantity of potatoes and of cabbages, carrots, or turnips, in the liquor, adding pepper and salt to the taste; when nearly done, but not quite, take them out of the liquor and break them into small pieces, about the size of a pigeon's egg; after which, having heated a little lard or dripping in a fryingpan, they, with the liver sliced thin, are to be put in and fried till they are sufficiently done. Lastly, after taking out the whole, the liquor is put into the pan, thickened with a little flour, and warmed up, when, on being poured over the liver, &c., the dish is complete, and is a very savoury one, when properly prepared according to the above directions. The cost being as below, varying of course in certain localities, in some of which, for instance, bullock's liver is scarcely to be had at any price, and there these remarks will not apply. When, however, the prices are ascertained, the proper correction can readily be made.

	s.	d.
3 lb. bullock's liver	0	6
2 lb. potatoes	0	1½
1 lb. cabbage or carrots	0	0½
2 oz. lard or dripping	0	1
Spice, flour, and salt	0	0½
	0	9½

This will make, with one or two pounds of bread, a dinner for a labouring-man and his wife, together with from five to six children, according to their ages; the whole cost, with the bread, not exceeding one shilling, independently of the firing. If a smaller proportion of liver is used the cost will be still less.

(*b*) Bullock's Liver and Rice.—Soak three pounds of liver for half an hour in water to get out the blood, then boil it gently in three quarts of water with one pound of rice, add two or three onions, a little parsley, and, towards the last, pepper and salt to the taste, together with four table-spoonfuls of vinegar. At the time of adding the spice, cut the liver into slices, and the addition at that time of a rasher or two of bacon is a great improvement. This is sufficient for the same number of persons as the last, when eaten either with plain boiled potatoes or bread—the cost being also about the same.

(*c*) Liver Pudding.—Stew a pound and a half of liver in a very small quantity of water for an hour and a half, then cut it up into small squares, season with pepper and salt, and add either some pieces of bacon-fat, beef-fat, or mutton-fat. Make a crust of dripping and flour, as directed at page 500, and line a quart basin, put in the liver and fat well mixed together, pour in the gravy remaining in the stewpan, and cover with crust; then boil in a cloth for two hours. This, with three pounds of potatoes, will go as far as (*a*) or (*b*). The price being—

	s.	d.
1½ lb. of liver	0	3
4 oz. of bacon, or fat	0	2½
Flour and dripping	0	3
Spice	0	0½
3 lb. of potatoes	0	2½
	0	11½

(*d*) Beef Kidney is capable of being used in the same way as liver; but it requires long soaking in very weak vinegar and water after cutting it open, to deprive it of the strong flavour peculiar to the kidney of the ox.

(*e*) The Melt, which is extensively used even in well-furnished kitchens, is also by the poor sometimes made available as follows:—It must be prepared by soaking it for three hours in salt and water, with the addition of a spoonful or two of vinegar, then let it be dried with a cloth, and made into a thick mass by tying together alternate layers of it and thin slices of bacon, with a seasoning of sage and onions, parsley, and a little of either thyme or marjoram according to fancy. Put on the top a lump of dripping or lard, and bake, or put in a Dutch oven in front of the fire, dredging it well in either case. The price of a melt varies from 2d. to 6d.

(*f*) WHEN PIG'S, CALF'S, OR SHEEP'S LIVER OR KIDNEY can be obtained at a low price, they are superior to the above in flavour; but they are seldom to be bought for less than double or treble the price of beef liver.

(*g*) PIG'S BLOOD is generally to be had for nothing, when it is obtainable at all, or at all events the price is very low. Cottagers, who kill their own pigs, would do well to exchange with their neighbours a portion of the blood, as it is generally more than they can use themselves, and black-puddings may readily be made without the skins. The directions given at page 485, are sufficient, and need not be repeated here. This is a very cheap and nourishing dish, and when made without the skins, it may either be plain boiled or fried, with boiled potatoes and lard, or dripping.

(*h*) COW-HEEL, as sold in the shops, is already boiled and deprived of a large proportion of its nourishment. It is not, in this condition, at all an economical dish, as one of them has not more than half a pound of gelatinous matter upon it, and they are sold at from fourpence to sixpence a-piece. If, however, a *raw* cow-heel can be got at that price, it is cheap enough, as there is a large amount of nutritious matter in it which it loses in the preparation at the tripe-shop. It only wants four or five hours slow simmering, and in that time it will give out a quantity of excellent soup, besides the same amount of solid matter that it contains when bought ready prepared. The hoofs merely require putting into boiling water for a few minutes to get them off, together with the hair remaining on the skin attached to them, after which the feet are ready for boiling.

(*i*) SHEEP'S TROTTERS.—These in the country compose a most nourishing and cheap dish, but in London they are so highly valued that they are not to be bought at a correspondingly low price. In the latter city, besides, they are not to be obtained in their raw state, but always boiled and deprived of half their value, while at the same time the cost is doubled. Nevertheless they are eagerly sought for at the tripe-shops in the poor neighbourhoods, the price being from a farthing to three farthings a-piece. On the other hand, in the country, they are neglected, and are generally to be bought of the tanners who collect the skins, at the rate of eight or ten for 1d., and often as many as a dozen may be had for that sum. A trotter, after cleaning, will generally average two ounces, so that here we have *more than a pound of nutritious matter and bone for one penny*, the bone not weighing anything like half of the whole, and being also full of gelatine. They are prepared by first scalding them in boiling water, and if this is scarce it is better to put them into a saucepan with the water previously made boiling, and simmer them for ten minutes, as, unless the proportion of water to trotters is great, the temperature is lowered too much to have the proper effect of loosening the hoofs and hair. It is, however, easy to try one, and if the hoof and hair do not come off, put them on the fire and boil till they do. When this is found to be the case, it is only necessary to remove them with a knife, taking one at a time and scraping it; then after washing it clean in cold water, the whole are to be simmered till they fall to pieces, when the bones are taken out, and pepper and salt added with any onions, parsley, or other garden-stuff which may be readily available. With this, as a foundation, a most savoury and nourishing mess may be made. Boiled rice or potatoes may be added to them in the pot, or eaten separately. The cost, for a large family, of a substantial meal made in this way is as follows:—

	s.	d.
30 trotters	0	3
6 lb. potatoes or 1½ lb. rice	0	4½
Onions, parsley, &c.	0	1
Pepper, salt, &c.	0	0¼
	0	8¾

(*j*) MEAT SOUP WITH PEAS—

Half an ox cheek, or a sheep's head	0	6
3 lb. of potatoes	0	2
1 pint of split peas	0	3
2 onions, 2 turnips, and a stick of celery	0	1
Salt and pepper	0	0½
Water, 7 quarts		
	1	0½

This will produce about five or six quarts of good soup, by the following method of proceeding:—Wash the cheek or head, peel the potatoes very thin, and boil all together for six hours; then take out the cheek or head, strip off the meat and put by, and return the bones, which are to be gently stewed for another six hours in a Papin's digester, if at hand, or if not, in the saucepan, with a part of the liquor. The fire required is not more than the small one always necessary for warming a cottage. When the bones are stewed for this second period, they may be taken out and the liquor from them added to the previously-boiled vegetables and meat, after which the whole is warmed up and served.

(*k*) Meat Soup with Rice, &c.

	s.	d.
1½ lb. of coarse gravy beef	0	5½
½ lb. of rice	0	1½
½ lb. of Scotch barley	0	1½
An onion and seasoning	0	0½
6 quarts of water.		
	0	9

This will, at the above cost, produce about nine or ten pints of good broth, but not equal to the former soup in quality.

(*l*) Pea-soup Without Meat:—

	s.	d.
Half a pint of peas	0	1½
A carrot and turnip, a head of celery, and two onions	0	1½
Dripping	0	1
Pepper and salt	0	0½
Water, three quarts.		
	0	4½

This produces about two quarts of very palatable soup, when managed by boiling the peas in the water for three hours, and then adding the vegetables, previously cut up and fried in the dripping; after which the whole is to be boiled slowly an hour and a half, and seasoned with pepper and salt towards the last.

(*m*) Barley Broth Without Meat:—

	s.	d.
Half a pint of Scotch barley ...	0	1½
Ditto of oatmeal	0	1½
Two ounces of dripping	0	1
Vegetables as for (*l*)	0	1½
Seasoning	0	0½
Water, five quarts.		
	0	6

Making about three quarts and a half of broth, costing about as much per quart as the pea-soup.

(*n*) Baked Rice Pudding.—Put half a pound of rice into three pints of skim milk, sweeten with three ounces of sugar, add an ounce of good beef or mutton dripping, and a laurel leaf. Nutmeg, lemon-peel, or allspice is an improvement when at hand. This, when baked, will produce about four pounds of good solid pudding, at a cost of—rice 1½d., sugar 1d., milk 3d., dripping ½d., total 6d.

(*o*) Sprats or Herrings (*both fresh and cured*), when fried in dripping or lard with potatoes and onions, make a very cheap and nourishing dish—that is to say, they can be obtained at a low price; as also do plaice (see sect. on Fish, page 262).

(*p*) Rice and Apple Dumplings.—Boil half a pound of rice, tied up loosely in a cloth, until the grains will stick together; then surround some apples previously pared with a layer of this; tie up in a cloth and boil for half an hour. When, as is often the case, apples can be had for little or nothing, this dish costs only the price of the rice and a little sugar or treacle to be eaten with it.

(*q*) Oatmeal Porridge.—This, as made in Scotland, is a very useful dish, and is there the chief food of the labouring classes. The receipt for its concoction is given at page 531, and the cost is merely that of the meal and the milk eaten with it. A quarter of a pound of oatmeal, costing about three farthings, will make more than a quart of porridge, the quantity of meal required varying with its quality. With this food a good breakfast or supper may be made for one penny.

(*r*) Rice Porridge, described at page 531, is also another very economical dish, which may be useful to the poor.

(*s*) Kolcannon (*an Irish dish.*) — Boil separately equal quantities of potatoes and cabbages; when the former are fit to peel, take off their jackets, and mix the two together in a saucepan, after pouring off the cabbage liquor, then beat them up together, and add an ounce of lard or dripping to each pound of potatoes. Season with pepper and salt, and most people add to the cabbages an onion or two.

(*t*) Indian Mush.—Have ready on a clear fire a large saucepan of boiling water; take in one hand the mush-stick (a strong round stick, nearly half-a-yard long, and flattened at the lower end), and with the other hand throw in *gradually* sufficient Indian-meal to make a very stiff porridge, stirring it all the time with the stick; add a *very* little salt; after the mush is sufficiently thick and smooth boil it one hour more, stirring it frequently from the bottom to prevent its burning; then cover the pot closely, and let it simmer for an hour. Its goodness depends upon its being thoroughly boiled and sufficiently smooth and thick; if kept three or four hours over the fire, first boiling and then simmering, it will be better. Send it to table hot in a deep dish, and eat it with either milk, butter-milk, cream, butter and sugar, or butter and treacle. Cold mush may be cut in slices and fried.

(*u*) Indian Hasty Pudding.—Place on the fire three quarts of boiling water, with a little salt; stir in by degrees three quarts of

Indian-meal and a quarter of a pound of butter; it should be stirred till quite thick. Serve it hot, and eat it with milk or cream, treacle or sugar.

(*v*) Plain Indian Breakfast-cake.—Mix over-night one quart of yellow sifted Indian meal, one handful of wheat-flour, and one spoonful of salt; pour on gradually one quart of warm water, and stir it so as to form a soft dough; cover the pan closely, and set it by till morning, when dissolve in one pint of warm milk and water a salt-spoonful of carbonate of soda, and with this mixture reduce the dough into a batter, stirring it very hard; cover, and place it before the fire for a quarter of an hour; have ready over the fire a fryingpan or griddle; grease it well with lard or fresh butter, and bake the cakes in the shape of small crumpets. When brown on one side, turn them with a knife. These cakes may be eaten with dripping, butter, or treacle.

(*w*) Indian-meal Gruel.—Sift some Indian-meal, then mix in a quart basin two spoonfuls of the meal with three of cold water; stir it till quite smooth; then pour in gradually a pint of boiling water, stirring it well, and add a pinch of salt; next put it on the fire, and let it boil half an hour, still stirring it to prevent its burning, and skimming it. It should be eaten warm, and sweetened with sugar, or a little nutmeg and white wine if approved. This is excellent for invalids.

(*x*) Hominy is Indian-corn shelled from the cob, and divested of the yellow skin, so as to be perfectly white, and then dried. Having washed it well through two or three waters, put it in a pan, pour over boiling water, and cover it; let it soak for several hours. Drain it, then put it in a clean saucepan, allowing two quarts of water (cold or hot) to every quart of hominy, and boil for five or six hours, stirring it frequently. Drain it *dry* through a sieve or colander, and put it in a deep dish; add a little butter, pepper, and salt; serve it hot to eat with any sort of meat, particularly with beef, pork, or bacon. If properly prepared, it is very wholesome and strengthening. What is left may be re-boiled next day for one hour, or it may be made into flat cakes, adding a little wheat-flour, and fried in lard or butter.

(*y*) Indian Dumplings.—Mix three pints of Indian-meal with half a pound of finely-chopped suet, dredged with wheat-flour; add one small tea-spoonful of salt; put in gradually sufficient milk to make it into a stiff dough, and knead it; divide the dough into equal portions, and then, having floured the hands, make each portion into a ball the size of a small orange; flatten them with a rolling-pin and beat on both sides to make light and flaky. Tie them up loosely in small cloths previously soaked in hot water and floured, put them in boiling water, and boil for two hours. When done, dip each dumpling in cold water before the cloth is untied. Send them to table hot. They may be eaten with boiled fresh or salt meat, or as sweet dumplings, with treacle, or butter and sugar.

1709. With the above dishes a poor man's wife may manage to make a few shillings go a great way, varying them with dried fish and potatoes, or the same fried. In the above calculations, it has been assumed that there is a family of four to six children, but when this is the case, two or three will always be able to earn a little, in order to help the wages of the father. Altogether it may be assumed that the whole family will earn about 15s. per week, and that the rent and clothing are paid by the garden and pig, which ought to be the case with good managers, there will then remain, after allowing 3s. for coals, wood, schooling, and emergencies, 12s. per week to be spent in food. Of this, 1s. 2d. may be allowed for beer, which will give nearly three gallons per week if brewed at home, and 10s. 10d. for food. The breakfasts and suppers may be made at about 1d. per head, or 6d. per day, which per week will be 3s. 6d., leaving 7s. 4d. for the dinners, which, as I have shown, may be furnished in the most ample manner for that money, as follows:—Sunday (dish *a*), with bread, 1s.; Monday, soup (*f*), four quarts, 8d., and bread, 4d.; Tuesday, trotters, prepared (*i*), 8½d.; Wednesday, bacon fried, 1 lb., potatoes, 8 lb., 1s. 0½d.; Thursday, soup, with rice (*k*), 9d., bread, 4d.; Friday, same as Sunday, 1s.; Saturday, rice pudding, 6d., and black-puddings, or some other dish with bread. The outlay altogether being below the allotted sum.

1710. It has thus been shown, that the family of a labouring man may be kept in a good and wholesome way, upon viands which are appetizing enough to those who use strong exercise, for a sum which will barely suffice to purchase bread and potatoes. Thus, supposing the family to consist of seven in number, they would eat at least sixty pounds of bread, and as much of potatoes, costing 13s.; and if cheese or bacon is added, at least 7s. more. In point of economy, the bread diet so much practised by the poor is a very extravagant one; and in point of nutrition, potatoes when used alone, as by the very poor, are of very inferior value, and not adapted for the hard-working man. But with the above diet, costing no more money, he may be kept in full health.

BOOK VIII.

ON THE GENERAL MANAGEMENT OF THE SKIN, TEETH, &c.

CHAP. I.—AIR, EXERCISE, AND BATHING.

SECT. 1.—ON THE IMPORTANCE OF GOOD AIR.

1711. **AIR** is as necessary to existence as food, and its total deprivation is still more rapidly fatal; but the quality of the air inspired is also of nearly equal importance, though this is not quite so readily proved. Nevertheless it is an admitted fact that pure air, uncontaminated by either decomposing animal, vegetable, or mineral products, is of the greatest consequence to the health of the human race. This subject has, however, been dwelt upon at some length in the chapter treating of the selection of a residence at page 78, and it is therefore unnecessary to allude to it further here.

SECT. 2.—ON EXERCISE.

1712. **EXERCISE** comes next to air and food in its bearings upon the healthy development of the human frame, but its effects are dependent upon a very different chain of laws. In all machines made by man, the workmanship is completed before the machine is calculated for use, and every day's "wear and tear" has a tendency to injure it, except in the case of very delicate instruments which require a certain amount of liberty in their joints before they are at their best—as in musical instruments, for instance. But in the animal machine, the use or exercise of an organ is necessary to its full development, and *up to a certain point* the more it is used the more fully is it developed. Thus, a blacksmith's arm is much larger, in proportion, than his leg, while the pedestrian's or opera-dancer's leg is more fully developed than the arm. Whatever muscle is used in a more violent manner than the rest of the body becomes enlarged, and by its increase of size more powerful. But besides this effect upon the actual muscles employed in any particular action, a proper amount of exercise also promotes the due performance of all the functions of the body, increasing the activity of the circulation, and in that way influencing the nervous system and the general secretory apparatus. All this is so fully recognised and well understood by those who have investigated the subject, that it is almost unnecessary to allude to the fact; and it will probably be allowed as a rule by those who may read these pages, that exercise is necessary to the long enjoyment of health.

1713. **EXERCISE INTENDED TO MAINTAIN HEALTH** may be taken in three different ways—1st, by the use of the *organs of locomotion* in the natural way; 2nd, by employing the natural *organs of offence or defence*; and, 3rd, by the use of *gymnastics*, or artificial exercises.

1714. **LOCOMOTIVE EXERCISES** include walking, running, leaping, swimming, skating, and riding. These are all more or less desirable in strong and robust habits, and may be varied with advantage, so that they shall not become tedious or uninteresting. None of them are so serviceable to those who have recourse to them when they are not pleasant, as they are to those who enjoy the muscular exertion which must be employed. Thus, a mere walk taken for the sake of health degenerates into a disagreeable task, and does not promote health nearly so much as it would if voluntarily undertaken with some pleasant object in view. The same is the case with riding, skating, or swimming: they are always useful when they give pleasure, and though not injurious, yet they lose a great part of their benefit when they are reluctantly employed, or when they have become tiresome by a too frequent repetition. No exercise is equal to walking or running, especially for the young who have just completed their growth, and who require a considerable amount of muscular exertion to carry off the quantity of nourishment which their appetites cause them to take, and which the growth of the frame has hitherto demanded.

1715. **OFFENSIVE AND DEFENSIVE EXERCISE** is no less useful to the body when it can be taken in a good and wholesome air; but, as is too often the case, it is comparatively valueless when the combatants exert their skill in a close and confined situation. Fencing, wrestling, and boxing come under this class, and are all valuable as aids to the health and growth of the frame, however much they may be liable to abuse. Fencing is especially valuable, and it is a great pity that it should be so much neglected in the present day. When duelling was in vogue, it is easy to understand why it should be avoided as a part of the education of young men; but in the year 1856 a duel is a thing unheard of, and consequently the reason for the discontinuance of fencing has wholly ceased. Boxing is, perhaps, open now to the old objection against fencing; but even here the times are gradually dispelling the tendency to fight, and no one would be afraid of his son's learning "to spar," from a fear of his embarking in pugilistic encounters. The same may be said of wrestling with still more truth, so that taken altogether the system of taking exercise by the *guarded* use of the organs of offence and defence is the most valuable of all those offered to man, because in this mode the mind is engaged as well as the body, and as a consequence the latter benefits much more than it does in a more tame and uninteresting muscular exertion, wherein one great object is lost sight of—namely, the stimulus to the nervous system.

1716. GYMNASTICS have been invented to supply the place of both the previously described kinds of exercise, and for a time they succeed admirably. But it is only for a time, as it is always observed that the pupils of a gymnasium, after a while, lose their interest and cease to derive any benefit. The exercises described under the two previous heads are generally included in an extended course of gymnastics, which term indeed literally means *exercises*, but in a limited sense it is used for those which are taught with the view only of developing the muscles, and preparing them for the further progress in walking, riding, fencing, &c. Thus, mere swimming, though often taught as a part of gymnastics, is certainly not usually considered gymnastic, nor is riding or walking; and, therefore, it is better to confine the term to those exercises which may be carried out by means of an apparatus of poles, boards, &c., in a limited space, but in the open air. Such is the ordinary acceptation of the term; and when a similar object is to be carried out for the female sex, the term *calisthenics* is made use of. In both cases there is a call upon certain muscles of the body not generally used, and for the male sex a spirit of emulation is excited, which makes the effort much more beneficial. With the aid of this effect on the mind, gymnastics are of considerable benefit; but as this emulation cannot be kept up very long, the good effect soon ceases, and gymnastics proper must be replaced by some one of the exercises described under the two last paragraphs. For the female sex calisthenics are always open to the same objection; and in their case, dancing, with the aid of the excitement produced by music *in a healthy atmosphere*, is a much better substitute. I confess that, except as a mechanical aid for defects of formation, I have never seen much good derived from either one or the other, and in the case of the female sex less than in that of boys. When they are intended to remedy disease, the case is somewhat different; but for the purpose of maintaining health, I look upon pure gymnastics as only useful when employed as a good introduction to pedestrianism, riding, fencing, &c.

1717. But, independently of detail, it should be impressed upon all young persons that nature has implanted in them a law, which if neglected assuredly leads to disease. That law is, that every organ (with very few exceptions) becomes wasted by disuse, and that all are dependent one upon the other, so that if one set is allowed to lie dormant, all the others sympathise with it. This is even true with reference to the mental faculties, which require a healthy body in order to allow of their full play, while at the same time if the whole energies are wasted upon bodily objects, and the mind is allowed to lie fallow, it will suffer in its powers, and gradually become more and more weak. But though muscular exercise renders the brain as well as all the other organs in a condition fit to exert themselves to advantage, yet it can do no more; and if they are still suffered to remain idle, in spite of the perfect condition of their machinery, no fault can be imputed to the bodily powers on account of the high state of health in which they are existing.

1718. THE AMOUNT OF EXERCISE necessary for health is very variable, depending upon natural constitution, education, sex, and age. For men from twenty to fifty, eight or ten miles a day of walking exercise may be taken as the average; and for women of the same age, about half this quantity will suffice. Less than this will go a great way, but for keeping up high health the above amount, omitted only on thoroughly wet days, may be considered necessary.

SECT. 2.—BATHING.

1719. IN A STATE OF NATURE man accustoms himself to a plunge in the nearest pool or sea, and no doubt with great advantage to his health. Almost all animals are subject to the natural washing of the rains of heaven; and to a certain extent the savage has this compulsory means of cleansing his skin. But in our civilized state of society it is rarely that we get even damped by rain, and even a good and healthy perspiration is to some people a not very common mode of getting rid of the superfluous scarf-skin. It becomes, therefore, doubly necessary that we should in some way supply this want of the system, and the best means for doing this must now be examined into.

1720. THE SKIN is not only an investment of the body, mechanically packing up its organs and protecting them from injury by its smooth and yielding surface, and by its constantly supplied layer of dead scarf-skin; but it is also the seat of an excretory apparatus of no mean importance. This consists of two sets of small glands, one of which is destined to free the blood of a large part of its fluid in the shape of perspiration, while the other secretes an oily matter, which is intended to soften and lubricate the skin. The former of these are extremely minute, and quite beyond the scope of the unassisted eye; but the latter may, in many parts of the body, be readily seen to open upon the surface, and are very frequently full of their peculiar secretion. Both of these sets of glands end in small tubes, and in order to the due discharge of their secretions, they must be kept unclogged. There are said to be more than three thousand perspiratory tubes opening in a square inch of the palm of the hand, and the average for the whole body is little beneath that number, so that a man of ordinary stature has seven millions of small tubes opening upon the surface of his body, besides those destined to secrete oily matter. From these tubes a constant distillation of fluid is taking place, which is insensible in small quantities, but very palpable under unusual degrees of exertion, or external heat. Its object is to regulate the temperature of the body, because in becoming converted into vapour, caloric is rendered dormant, and thus withdraws a large amount from the surface. But in addition to these, there are the sebaceous follicles already alluded to, which are distributed more or less closely over the whole surface of the body, being less abundant where the perspiratory openings are most numerous, and *vice versâ*. They are altogether absent in the palms of the hands and soles of the feet, and abound in the face and scalp, as well as over the shoulders Where there are hairs, the sebaceous follicles and hair-tubes coalesce and emerge together, so that each hair oils itself as it grows, by passing through the course of the follicle, and this oil naturally spreads along the course of the hair. The purpose of these follicles is clearly to keep the skin soft and free from cracks, to which it would be otherwise liable when exposed to the sun and air, and hence they are very much more abundant in those races of mankind which have been long accustomed to a tropical sun. It is also supposed by many physiologists that this secretion is intended to assist in cleansing the blood; and, I believe, with truth; for it cannot be denied that when the skin is comparatively closed by disease and neglect of ablution, the health suffers in a certain degree. By mismanagement, the skin may be made either to give way too readily, and thus produce exhaustion; or, on the other hand, to refuse to do its natural office, and so cause fever. To promote the proper cleansing of these tubes, and, while allowing of the due amount of secretion, to avoid excessive perspirations, is the office of *bathing*, the subject of the present section.

1721. Bathing, as a promoter of health, may be either carried out in the open air, or in the house, or it may be confined to a mere ablution of the body. As a remedial agent adopted for the removal of disease, bathing cannot be considered in the present chapter; but, hereafter, we shall find it one of the most powerful in existence. Until of late years, the skin was very much neglected in this country; and even now many people may be met with whose skins have never known the sensation of water, excepting the parts visible to the eye. Hundreds and thousands have never had a bath, and a still greater number only as an exceptional case, when ordered as a part of some plan of medical treatment. Yet it is well known that health depends upon a frequent ablution of the whole body, and though a bath is the most convenient and complete method of carrying out the process, yet, by means of a sponge, or any similar object, it may be effected sufficiently to cleanse the pores. Whether by means of one or the other, this should be done at least two or three times a week, followed by strong friction by means of a coarse towel. In this way the follicles of the whole body are kept clean at their mouths, and by the towel are emptied of any thick matter contained in their extremities, while at the same time the vessels are braced, and are prevented from giving out more than a healthy amount of fluid. This effect is produced by the sponging with *cold* water; and, in addition, there is the reactionary glow resulting from its contact, and which appears to be a natural process established to keep up an average temperature of the body, but kept in abeyance, when by the aid of artificial means it is no longer required. Those who use cold water regularly, either with the sponge or as a bath, are certainly able to bear exposure to the weather much better than without its aid; and this good effect is no doubt dependent upon the regular education of the heat-generating organs, whichever and wherever they may be, so that they are at once ready to act the moment they are called upon; and almost immediately after the cold water is applied, a red blush appears on the skin with a development of heat greater than before. Whenever this occurs, it may be concluded that bathing, or cold ablution, is beneficial; and, on the contrary, when it is absent, it is not prudent or safe to continue the practice without some experienced person to advise upon the case. Many people, who naturally are disinclined to this reaction, become gradually accustomed to the cold, so as at last to develop heat as well as their more robust neighbours; but some skins and constitutions can never be made to bear cold with advantage, and are even braced by the use of hot-water. This I have known many times, and in spite of a long and cautiously carried-out plan of cold-bathing, they have at last been obliged to give up the attempt, and have recourse to the opposite extreme of hot-baths, or else let their skins remain in a state of impurity. But these are the exceptions to the rule, and cannot be considered as affecting the mass of mankind; though still the fact should be known, lest individuals might be induced to persevere too long in the attempt, from a belief that *all* ought to be able to bear the shock produced by the contact with cold water. It may be said that such individuals are in a state of disease; but if so, all in this country must be included in the same category, for certainly I have known some who were in all other respects free from any ailment whatever, and yet could never bear the contact of cold water, nor could they ever be made to develop heat rapidly after it, as in the ordinary reaction of bathing. In these individuals hot water at a temperature of 105 or 108 degrees is positively bracing, and in some cases I have known it almost as great a panacea as the cold-water cure so much vaunted in the present day.

1722. THE UTENSILS for bathing in the open air are the bathing-machines, which are only to be met with on the sea-coast, and which are hired for the use of the bather at a fixed sum. In domestic bathing, whether hot or cold, the bath is a vessel of the same shape. Of these there are two chief kinds—1st, *those fixed;* and, 2nd, *moveable baths.* The fixed baths have been described at page 63. Moveable baths consist of—1st, the *slipper-bath;* 2nd, the *hip-bath;* 3rd, the *sponging-bath;* 4th, the *foot-bath;* all of which will be found more fully described under the chapter treating of the use of the bath as a remedial agent.

1723. IN THE USE OF THE COLD BATH, whether marine or of fresh water, the whole body should, as a rule, be immersed, where the object is to preserve the general health. For certain remedial purposes it may be desirable to use local cold, but as a general means of cleansing the skin, and at the same time of bracing it, the better plan is to plunge the whole body beneath the surface for a moment, and as rapidly as possible afterwards emerge from the bath. It is seldom that a continuance longer than for a few seconds in the water is of service, though in warm weather it is very pleasant, and in many cases does no harm; but that it does no good is equally clear; and, therefore, however pleasant a long-continued bath may be in hot weather, yet it is by no means to be recommended. With regard to domestic bathing in cold water, the sponging-bath is that which is chiefly to be used, as there are few people who can bear immersion in cold water in the house without too great a call upon the powers of the system. Cold sponging produces quite as great a bracing effect, without abstracting too much heat; and it also cleanses the skin quite as well as, or even better than, immersion. When regularly practised, and followed by the use of the rough towel, no soap is needed to cleanse the pores; but if only occasionally employed, this detergent is very useful. Those who take any kind of cold bath should not be slow and languid in their operations, but sponge themselves with briskness, and without delay rub themselves dry. In this way the mere activity of the process aids in generating heat and producing reaction, and avoids the tendency to chill, which is sometimes caused by a neglect of this precaution.

1724. WHERE HOT BATHS ARE TAKEN on the principles alluded to at par. 1721, the temperature must be raised high enough to produce reaction, and they should not generally be taken just before getting into a warm bed, which will almost always occasion excessive perspiration. Those who really benefit from a hot bath find, that they feel cold after one in which the temperature is too low; but if raised to 105 degrees, or even higher still, the skin is stimulated till it is in as great a glow as could be produced in others by a cold affusion; and when this is the case, exposure to cold afterwards is borne with nearly as great impunity as in those who use the cold bath instead; especially if after the hot bath the body is at once fearlessly exposed to a cold atmosphere, or to cold water itself. Such is the Russian plan, except that in their baths steam is used instead of hot water; but the effect is the same, and the skin is stimulated exactly by the same action of high heat, though in the shape of steam instead of water. It appears in their plan to render them nearly as insensible to the effects of cold as our cold bathing does us; and there can be no doubt that there is little difference in the amount of heat-generating power produced by the two modes, however different the principles upon which they act. In order to avoid discussing the various vexed questions connected with bathing in an imperfect manner, I have here confined myself to that part of the subject which is connected with the preservation of health. The remainder of the subject, comprising the use of the bath in the treatment of disease, will be found fully treated of under its own particular heading, in Book XII., describing the Domestic Management of Disease.

CHAP. II.

THE MANAGEMENT OF THE HAIR, EYES, TEETH, AND EXTREMITIES.

SECT. 1.—ON THE HAIR AND ITS PROPER TREATMENT.

1725. THE HUMAN HAIR is formed by the conversion into a hard and polished tube of the soft substance contained within the interior of a follicle. This hair-follicle is formed by the inversion of the skin, so as to make a fine tube piercing its own substance, like the inverted finger of a glove, and lined with a continuation of the scarf-skin or epidermis. From the bottom of this follicle a *papilla* rises, the exterior of which is known as the *bulb*, whilst the soft interior is called the *pulp*, and is very full of blood vessels. Until lately it was supposed that the hair is a mere secretion, like the nails and epidermis; but this view is now shown to be erroneous by the revelations of the microscope. All hair consists of two parts—1st, a *cortical*, or external substance of a horny texture; 2nd, an internal *medullary* matter, resembling the pith of plants. The cortical substance forms a tube more or less horny and dense, and giving firmness to the hair, whilst the medullary substance is composed of a series of cells, which seem not to contain any fluid in that part of the hair external to the skin. On the exterior of the human hair there exists a thin, transparent, horny film, composed of flattened cells or scales, arranged in an imbricated manner, their edges forming delicate lines upon the surface of the hair, sometimes transverse, sometimes oblique, and sometimes apparently spiral (*fig.* 137 A). Within this there is a cylinder of fibrous texture, forming the shaft of the hair, and composed of fibres marked by delicate longitudinal striæ (B), which may there be traced. Among these fibres in dark hairs pigmentary granules are scattered, giving the precise colour and shade to the hair; but they are chiefly found in the central cells, where they abound so much as to form a dark spot in the middle of the transverse section (C). But sometimes this central collection is absent, and the small quantity of colouring matter present is diffused equally through the substance, as at (D). The fibres of which the shaft is made up are probably cells become elongated by a process peculiar to fibrous membranes, and which have secreted horny matter in their interior. This change is continually going on in the *bulb*, at the base of the part previously completed; and by the progressive formation of new cells the shaft is made to grow from its bottom, being at the same time protruded through the skin. The central medullary substance appears to be formed by the cells of the *pulp*, in which a growth is continually taking place at the same rate as that of the bulb. The imbricated layer of cells which forms the true cortical substance may be compared to the scarf-skin with which it is continuous, being developed by the external layer of the bulb. Thus, the hair is constantly undergoing a process of lengthening by the addition of new substance at its base, just as the teeth of the *rodentia* grow from their pulps. The part once formed usually remains without alteration, excepting that produced by external influences; but there is strong reason to believe that under certain circumstances it *may* be altered in colour, &c., by changes at its base, the effect of which is propagated throughout its length. Instances are recorded of the change of the entire hair from black to gray in a single night, which can only be understood by a knowledge of this cellular structure of the hair, and of the possibility of a fluid, chemically affecting the pigment, being secreted at the base, and imbibed through the whole internal cellular structure. In certain diseases, also, the hair

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becomes split, and exudes a glutinous matter, which is evidently transmitted through the canal; and it is even said by persons worthy of credit, that in some severe cases blood is given out by the hair on its division.

1726. WITH THIS CURIOUS STRUCTURE, which I have been particular in describing, on account of the importance of the hair in point of ornament, it is no wonder that when badly treated hair becomes rapidly injured in quality and colour. In describing the skin, I had occasion to show that the hair follicles, and the sebaceous follicles (par. 1720), coalesce in their external openings, and, as a consequence, when one of these is obstructed or diseased the other suffers. Unless the skin is kept in a healthy state, and its epidermis is removed by friction or ablution, the hair can with difficulty protrude from its seat or follicle, and as a consequence it is dwarfed, or even deformed, by being twisted on itself as it lies confined in its course through the skin. It also explains the effect of stimulants upon its growth, which, though denied by some people, is too clearly the case to be disputed. Grease, in all its varieties, is no stimulant, though it aids the growth by allowing the hair to escape from its follicles; whatever is a stimulant to the skin has a similar effect upon the hair, the vessels of the skin itself and of the hair follicles being closely connected. Hence it is that whatever blisters the skin will, in a less dose, stimulate the hair follicle to secretion, such as turpentine, cantharides, or ammonia. Soap is generally injurious, from its removal of the oily matter of the hair: but in some cases, when there is a quantity of old and tough epidermis matted with the contents of the sebaceous follicles, and obstructing the growth of the hair, nothing else will liberate it from this injurious thraldom. For young children it should never be used in those cases when plenty of water is likely to be employed; but if the head is not *regularly* washed every day, soap will rather be beneficial than otherwise; for it will only remove enough of these impeding materials without entirely destroying the secretion of oily matter, or rendering the hair too dry and brittle. I am quite sure, however, that with proper cleanliness, the hair ought never to be touched with soap, egg, or any other solvent of oil. Nevertheless, as I said before, if this daily washing is not practised, and in the long hair of ladies it scarcely can be, an occasional washing with the yolk of egg is beneficial. Next to ablution comes friction, which acts in the same way, and when not too violent is very efficacious. But when employed through the medium of a sharp-toothed comb, or a very penetrating brush, which is improperly used, it is mechanically injurious by leaving the true skin bare of its covering, and causing it to become inflamed. Few people use a brush in a proper manner, either upon their clothes or their heads. The first thing they do is to drive it into the skin in a perpendicular direction, which necessarily causes an injury to its structure when followed by a rough thrust in a lateral direction. But if carefully used the brush ought to be pushed into the hair *at an angle with the surface of the skin*, and as soon as it reaches that surface it should be kept from irritating it more than enough to raise any loose particles of epidermis. It is of no use to attempt to prevent this abuse of the brush, by allowing the use only of soft bristles, because such a material will not, and cannot, be made to enter a curly or stubborn crop, and is, therefore, quite inefficient. The error is in the hand, not in the tool, and this should be fully understood. It is a pleasure to be manipulated in a scientific manner by a master of the hair-brush; and I know few more painful moments in the ordinary affairs of life than the clumsy attempts at brushing made by an ignorant hairdresser. From these remarks it may be understood—1st, that the follicles of the skin are by nature intended to lubricate each hair as it passes out, and when in a healthy state sufficiently so to serve it in its whole length; 2nd, that soap and egg only remove that which is intended by nature to supply a want of the hairy covering; 3rd, that stimulants may be made to encourage the growth of the hair *directly*, while oily matters only *permit* its escape from its previous thraldom; 4th, that plain water or friction are the only means necessary for keeping a healthy crop of hair in a proper state, but that a neglected scalp may require soap or yolk of egg.

1727. THE BEST STIMULANTS to the growth of the hair are turpentine and cantharides, of which a formula is given at page 421. By their means, whenever the bulb is not actually diseased, and so long as there is any hair left, however fine, it may be made to enlarge by the increased flow of blood transmitted to the follicles, and in this way I have succeeded in many cases in recovering apparently hopeless cases.

1728. WITH REGARD TO THE OILY MATTER required by the hair, it should be of such a nature as to remain liquid in the open air. Vegetable oils rapidly lose the fluid portion of their contents, so that in a very short time the hair is left in a worse state than before, because it is no longer moistened, and, in addition, it has a fresh layer of sticky and clogging matter. If oils are to be employed, they should be composed of animal fats, such as horse-fat, which is largely used, though not acknowledged by the vendors, trotter oil, or neat's-foot oil, all of which part with their fluid contents with great reluctance. The two latter may always be obtained in a greater or less state of purity, and the trotter oil in particular, when pure, is a most valuable addition to the articles of the toilet. Of course they may be scented with any favourite essential oil, all of which are slightly stimulating, and therefore advantageous rather than otherwise. Olive oil and almond oil, so generally used for the hair, are not at all calculated for the purpose to which they are devoted; and even when mixed with the hard animal fats, such as lard, or suet, they are too drying in their nature. Lard, when unmixed with flour, is by no means objectionable; but it is so often adulterated with that material, that it is right to melt it, and allow the flour to fall to the bottom, before using it for this purpose. Suet is in itself too hard, but it may be mixed with any of the animal oils to make pomatum with advantage.

1729. BY CUTTING THE HAIR, whether with the scissors, or the razor, its growth appears to be accelerated, though in what way it is difficult to show. When the razor is used, it is applied so near to the bulb, and removes so completely any foreign matter impeding the exit of the hair, that we can readily see how it may affect the question; but this is not the case with the scissors when applied to the long hair of the female sex; and yet we are constantly told, that their use to the tips of what the ladies call "back hair," causes an immediate effect on its growth. The belief is so general, that we ought not to dispute it, and I am by no means inclined so to do; but I suspect that the effect in preventing the split-ends from being broken off, is greater than upon the growth from the root. All hair, when once cut, becomes broken into two or more fibrous extremities; and these being fine and delicate, are easily removed from the thick and still whole body of the hair—by which the growth appears to be checked, though it may all the time be going on steadily. But supposing no removal of their broken ends and the growth to go on, there will be an evident increase, because there is no loss at the one end to counterbalance the growth at the other. Such is evidently the effect of cutting upon the coarser hair of the tails of horses, and possibly the same may take place in the soft hair of our female partners in creation. But in whatever way the cutting of hair may act, there can be no doubt, that it does improve the length and strength; and after once being adopted for children's hair, it should afterwards be repeated at short intervals, in order to avoid the splitting of the ends mentioned above.

1730. SHAVING is a process which may be either performed in a slovenly and bungling manner, or it may be done with great art and dexterity. In the first place, the hair should be softened by soaking it in water, or a lather of soap, by which it is rendered much more soft, and more readily cut. A strong lather of soap is usually applied; which, in the first place, acts as a softener, from its water; next, as a lubricating fluid, it prevents the razor from sticking to the skin, or, as it were, stumbling over its asperities; and, lastly, from its semi-solid consistence, it affords a support to the hair when opposed to the edge of the razor. The soap used should be of such a nature as to make a strong lather full of *small* bubbles, and it should be as free from all superfluous alkali as possible, to avoid irritating the skin. In applying it, it is better to wash the skin well beforehand, then brush on the lather with the shaving-brush, working it well into the skin, and let it remain to soften the hair for a few minutes, during which any other part of the toilet may be performed. Then apply another coat of lather, and at once proceed to take off the beard with the razor *warmed to the temperature of the skin, or rather above it*. Most people find it better to stretch the skin by the other hand, but a very skilful shaver manages the act without this process. The razor should be drawn in a gently-sawing manner across the beard, not exactly at right angles to it, but nearly so,—the art consisting in getting the two angles correctly, and in avoiding the chop instead of the proper sawing motion. By the *two* angles, I mean that made by the surface of the blade with the surface of the skin, and that between its edge and the axis of the hair. The angle with the skin should be as slight as possible, close contact causing adhesion, and thereby impeding the free play of the blade; but any thing short of this is the proper mode of holding it. Practice here, however, is the grand point, and without it no one will ever succeed as a shaver. When the head is to be shaved, it is better to remove the hair with the scissors to within half an inch, or even less, of the scalp, after which the razor may be used as for the beard, following the direction of the hair, and not meeting it.

1731. RAZORS AND RAZOR-STROPS of good quality are difficult things to meet with, especially the former, whatever price may be given for them. I am told that the manufacture is almost a lottery even among those who take the greatest pains; and it is undoubtedly a fact, that many very superior blades are constantly to be met with for one shilling a piece, while bad ones are as often purchased at ten times that sum. Nothing but experience of its quality will serve to indicate a good blade, though there are some barbers who, from their constant practice, are able to give a good guess as to the properties of an untried article. With regard to shape, much depends upon the mode of using the razor; but I fancy most people succeed better with a heavy blade than with a light one. The strop for sharpening the razor is a constant source of comfort or annoyance, depending upon its nature, or rather upon the quality of the material with which it is to be kept furnished. The crocus-powder is the chief material used, and it is quite sufficient to keep a razor in good order for a short time, but not very long without some further addition to its powers. It is evidently the foundation of the celebrated paste sold by Mr. Mechi, which has long maintained its hold upon the public, and as far as it goes is a valuable addition to the comfort of all having a tough and intractable beard. But beyond its powers of aiding the setting of the cutler it cannot go, and by itself will scarcely keep any razor with a fine edge many days together. The Canton strop and paste sold by Cowvan, of Fenchurch Street, is, however, a most successful article; and I can speak from a practical experience of some years as to its performing what it professes, namely, to supersede the necessity of setting on the hone. It has two kinds of paste, and four sides, each of which is used when the razor requires setting, and three when only slightly dull. The first, which is covered with a very sharp coating of emery-paste, grinds the razor like a stone, and should seldom be used; but it suffices when required to give a new edge; and by following the directions sold with the strop the proprietor of a strong beard, if he also applies plenty of lather and has the use of his hands, may readily take it off in ease and comfort.

1732. DEPILATORIES, intended to remove superfluous hairs by chemical means, are sold by unprincipled persons who well know their entire want of power. Nothing but the tweezers have the slightest effect, and the man who could succeed by less painful means would soon make his fortune.

SECT. 2.—MANAGEMENT OF THE EYES.

1733. When these organs are strong and naturally well formed, they may be left pretty nearly to themselves; but when the sight is naturally in any way defective, some little management is required. It should be known, that the conditions called short-sight and long-sight are not absolute disease, but are dependent upon mere alterations of form in the front of the eye, which are almost always born with the individual possessing them. When therefore they exist, some little management is required in order to relieve the deficiency of sight, which in some cases is very annoying.

1734. THE EYE, being an optical machine intended to throw an image upon the fine expansion of nervous tissue at its back, it follows that it must be made of a definite shape, and with its parts at certain known angles, in order to fulfil its office. In order, however, to understand the nature of its action, the ordinary laws regulating the transmission of light must be understood.

1735. THESE LAWS ARE AS FOLLOWS:—

I.—Light travels in straight lines so long as the medium through which it passes is of uniform density.

II.—When the rays of light pass from a rarer medium into a denser one, they are refracted *towards* a line drawn perpendicularly to the surface they are entering.

III.—When the rays of light pass from a denser medium into a rarer one, they are refracted *from* the perpendicular.

IV.—When rays proceeding from the several points of a luminous object, at a distance, fall upon a double convex lens, they are brought to a focus upon the other hole of it in such a manner, that an inverted picture of the object is formed upon a screen placed in the proper position to receive it. Thus, in *fig.* 138, A B is the object, and E F the lens; the rays issuing from the two extremities, and the centre of the object, are brought to a corresponding focus at a less distance on the other side of it, so as to form a distinct picture; but as the rays from A are brought to a focus at D, and those from B at C, the picture will be inverted.

V.—The further the object is removed from the lens, the nearer will the picture be brought to it, and the smaller will it be.

VI.—If the screen be not held precisely in the focus of the lens, but a little nearer or further off, the picture will be indistinct; for the rays which form it will either not have met, or they will have crossed each other.

1736. THE EYE itself, as exhibited in man, is a most wonderful optical instrument, intended to form an exact image of surrounding objects upon the retina. For this purpose the rays of light as they diverge from the several points of any object, and fall upon the front of the eye (cornea), are refracted by its convex surface whilst passing through it into the eye, and are made to converge slightly. They are brought more closely together by the crystalline lens (E F, *fig.* 139), which they reach after passing through the pupil; and the refracting influence of this dense body, together with that of the vitreous humour, occupying the space behind it, is such as to cause the rays issuing from each point to unite at a focus on the retina. In this manner a complete inverted image is formed, shown at *fig.* 139, which represents a vertical section of the eye, and the general course of the rays in its interior. As in the preceding figure, the rays issuing from the point A are brought to a focus at D, while those diverging from B are made to converge at C upon the retina, which is itself so thin as to be nearly transparent, and is spread over a layer of black pigment intended to absorb the rays of light, and thus prevent a confusion of the image by a reflection of its points from one side to another of the receding surface. Such is the simple account of the eye as an optical instrument,—beyond which it may be considered as consisting of certain parts intended to keep the machine in order, and also to correct its otherwise irremediable defects; but which need not be attended to by those who merely want to understand its management in health.

1737. THE VARIATIONS IN FORMATION already alluded to are chiefly two—in the first of which the cornea is too convex, and the refractive power is thereby made so great that the image of an object at a moderate distance is formed in front of the retina instead of upon it. When this is the case, in order to produce a distinct image, the object must be brought nearer to the eye, the effect being to throw the picture upon the proper place. Such an eye is said to be *myopic*, or short-sighted, and it can only be rendered efficient at average distances by the use of a concave lens in front of the cornea, the curvature of which is of such a form as to neutralize the superfluous convexity of the cornea. On the other hand, if this part is too flat, and the refractive power of the humours is thereby rendered too low, the rays from an object, also at a moderate distance, will not meet upon the retina, but would form an image behind it, if it were not for the impediment afforded by the black pigment. The picture is consequently indistinct, and can only be made clear by increasing the distance between the eye and the object, or, as in the case of the short-sighted person, by placing a glass lens in front of the eye, but with an opposite formation, its surfaces being required to be convex. Such a condition is very common in old persons, who are scientifically said to be *presbyopic*, or, in common language, long-sighted. Sometimes the short-sighted person can see nothing distinctly unless it touches his nose; and, on the other hand, many old persons cannot see at all distinctly, even at the greatest practicable distance, without the aid of glasses; but this extreme state of flatness is not common, except as a consequence of an operation for the removal of cataract, which is almost always followed by a great demand for the optician's assistance.

1738. THE ACCOMMODATING POWER OF THE EYE is a very remarkable property, and one which should never be lost sight of by those who have the management of young persons who are afflicted with short sight. We have not been able to ascertain with any certainty the exact nature of the contrivance by which this is effected, but that it exists is shown from the known powers of the eye, and from the nature of its mechanical structure. According to the laws stated at par. 1735, the picture of a near object can only be distinct when formed at a greater distance behind the lens, than the picture of a distant object. Consequently, when an eye can see both a near and a distant object equally clearly, without moving its situation as regards them, and in a very short period of time, it follows that the instrument itself must have been altered in some one or more of its diameters or surfaces. It is considered highly probable, that in the human eye the lens is brought backwards and forwards, according to the distance of the object; but this is merely a theory, propounded as the most likely of the many which have been advanced, and not as being capable at present of distinct proof. It is upon the existence of the power of accommodation that any improvement in the short or long sight can be expected; but with a knowledge of the possibility of its being called into play, no one should give glasses to a young person, until they had tried how far his sight might be improved by its education. All short-sighted persons, however marked their defect, may, by perseverance in using their eyes at the utmost limit of their powers, call the accommodating power into play, and in process of time it will most materially aid them. It is in this way that the mariner is enabled to discern ships or other objects at a vast distance beyond that at which they are visible to an ordinary person; and, in the same way, a microscopist educates his eye, until it accustoms itself to see minute objects, which defy the scan of the unaccustomed organ of vision. When the defect is so great, that there is no hope of ever dispensing with the use of a lens, it is of little consequence to educate the eye; but in more moderate cases, there is little difficulty, if the possessor of the defective organ will aid in the task. The only thing necessary is, to place a mechanical guard between the eye and the object to be seen, such as a book, slate, or copy-book, so that, in the first place, the nearer approach of one to the other is prevented; and in the second, the progress from day to day, or from week to week, may be measured. This progress is always slow, but it is also sure, and, up to a certain point, it goes on with great steadiness; so that if in the course of a week the distance at which a book can be read is increased half an inch, in another week it will most probably be read at an inch beyond the original position. But, as before remarked, up to a certain extent only will this go, as at last comes a dead stand; and beyond that all the powers and patience in the world will not often coax the recusant organ. But still a very slight improvement may sometimes even after this be made, and the attempt should be maintained for some time, especially as the practice must be continued for the sake of what has been already gained.

1739. **In the Selection of Glasses** there is a great deal of quackery and nonsense. There is but one rule as to the concavity or convexity, and that is to use only such as are pleasant to the eye, and in all cases to err rather on the side of weakness than power. It is well known that the eye cannot long be kept at one pitch, if the condition is that, so common in old age, of increasing flatness of the cornea. Here the progress has been made from a healthy condition to a defective one, and the same cause goes on to increase the defect, whether glasses are worn or not. It is quite true that the accommodating power alluded to at page 548, will make some little difference if drawn upon; but over and above this slight drawback, the use of glasses certainly does not hasten the alteration of the eye. All those, therefore, who are in want of such assistance may safely indulge themselves with such a glass as is comfortable to them; and if it affords them clear vision without fatiguing the eye, they may rest satisfied that they are deriving all the benefit of which the optician's art is capable. If the glass after a time becomes insufficient, as it generally does, they should increase the power, and this will do them far less harm than the straining of the eye at a confused mass of letters, rendered barely visible by their previously insufficient glass. Short-sighted people are troubled in a different way, and one at the same time that requires still more attention. As they become older their eyes become flatter from the same cause which affects the long-sighted person, and the consequence is that their glasses become insufficient *from being too strong*, so that they require them less concave than before. This is particularly the case with those who only wear their glasses occasionally; for if worn constantly, the eye becomes accommodated to their use, and the necessity for change is not so obvious; but so far from being objected to, it should be hailed with pleasure as the harbinger of a more perfect state of vision, to which each succeeding change in the power of the glass will bring the wearer more and more near.

1740. **Glasses for Rectifying Short Sight** may be either concave on both sides, or plano-concave, or concavo-convex—the last of which is particularly applicable to that worn in the eye, as by its shape it allows the eye-lashes full play, and is very much more comfortable than the flat glass. For long sight, also, the glass may be convex on both sides, or plano-convex; but the former is that most generally employed. Glasses are always numbered; but the different makers employ different gauges, and therefore they are only useful in comparing those belonging to any one maker.

SECT. 8.—MANAGEMENT OF THE TEETH AND GUMS.

1741. **The Teeth and Gums** together form a very important organ for the mechanical division of our food, and being constantly called into play at the time of taking it, ought to be kept in good order, for the purposes to which it is designed. The teeth are commonly considered to be parts of the *bones* of the body, but this is not the fact, either in man or in the lower animals, in many of which last they are mere scales attached to the mucous membrane of the mouth. Indeed, this is plainly the case in the teeth of man also, as will be seen if their formation and development are carefully examined in the condition of the embryo, which will be hereafter alluded to; prior to this, however, it is necessary to ascertain of what materials the tooth, as existing in the adult, is composed.

1742. **Each Tooth** is divisible into—1st, a *crown*, apparent above the gum; 2nd, a constricted portion round the base of the crown, called the *neck*; and, 3rd, of a *root* or *fang*, which is contained within the socket. This root is covered with periosteum, which also serves as a lining to the socket, and connects the two together. The base of the crown is hollowed in the interior into a small cavity, which is a continuation of the fine canal running along the centre of each fang. This cavity, with the canal, contains a soft vascular organ, the *pulp*, which receives its supply of blood vessels and nerves through the small opening at the apex of each root. Each tooth is composed of three distinct structures—1st, *ivory*, *dentine*, or *tooth-bone*; 2nd, *enamel*; and, 3rd, a cortical substance called *cementum*. When examined in a microscope, the *ivory* appears to consist of very minute tapering and branching fibres, imbedded in a dense, homogeneous, interfibrous substance, commencing from the cavity and radiating towards the circumference. The *enamel* forms a crust over the whole exposed surface of the crown, and gradually becomes thinner as it approaches the neck. It is composed of minute crystalline fibres, of a hexagonal form, with a direction extending from the ivory upon which they rest towards the free circumference. The quantity of animal matter in the enamel of the adult is extremely small, not exceeding 2 in 100 parts. The 98 mineral parts consist chiefly of phosphate of lime, with a small proportion of carbonate of lime, and a still smaller of phosphate of magnesia. Lastly, the *cementum*, has the character of true bone; but in the human tooth it exists as a very thin layer enveloping the root of the tooth, and commencing near the termination of the cap of enamel, and it is the part which is enlarged and thickened, when the fangs become diseased (see *fig.* 140).

1743. THE TOOTH IS DEVELOPED within an enclosure or capsule, which at one period completely covers it in. A papilla is first formed, from which the dentine takes its rise; and between this and the inner surface of the capsule a layer of thin membrane is formed, which ultimately becomes converted into enamel; whilst the cementum is nothing more than the capsule itself converted into bone, by the deposition of lime in its meshes. The various stages of this development must, however, be studied as they occur *before* birth. At about the seventh week of embryonic existence, the dental papillæ begin to make their appearance, upon the mucous membrane covering the bottom of a deep narrow groove (*fig.* 141 A), that runs along the edge of the jaw (B); and during the tenth week, processes, from the sides of this "primitive dental groove," particularly the external one, begin to approach one another so as to divide it by their meeting into a series of open follicles, at the bottom of which papillæ may still be seen. At the thirteenth week, all the follicles being completed, the papillæ (at first round, blunt masses of cells) begin to assume forms more characteristic of the teeth which are to be developed from them, and by their rapid growth they protrude from the mouths of the follicles (C) at the same time the edges of the follicles are lengthened into little valve-like processes, or *opercula*, which are destined to meet and form covers for the follicles (D). There are two of these opercula in the incisive follicles, three for the canines, and four or five for the molars. By the fourteenth week the two lips of the dental groove meet over the mouths of the follicles, so as completely to enclose each papilla in a distinct capsule (E). At this period, before the calcification of the primitive pulps commences, a provision is made for the production of the second or permanent molars, where capsules originate in buds or offsets from the upper part of the capsules of the temporary, or milk teeth (F). These offsets are in the condition of open follicles, communicating with the cavity of the primitive tooth; but they are gradually closed in, and detached altogether from the capsules of the milk teeth (G H I). Soon after the closure of the follicles of the milk teeth, the conversion of the cells of the original papilla into dentine commences, according to the method already described. Whilst this is going on, the follicles increase in size, so that a considerable space is left between their inner walls and the surface of the dental papillæ, which space is filled up with a gelatinous granular matter, the pulp destined to become enamel; but this conversion, and the ossification of the capsule, to form the cementum, take place at a later period. All the permanent teeth, which are destined to replace the milk teeth, originating in the above mode, by offshoots from the capsules of the former, there remains to consider the method adopted by nature in the formation of those which are not thus preceded by milk teeth. The first of these is found to be developed like a milk tooth, while the next is an offset from that, just as the permanent teeth are produced from the capsules of milk teeth; and, again, the last tooth is formed in an exactly similar way from this third molar—each of these teeth appearing at a considerable interval of time from its predecessor. (See Dr. Carpenter's *Physiology*, and Mr. Tomes' work on the development of the teeth.)

1744. THE PERMANENT TEETH consist of three distinct varieties in shape—1st, the *incisors*, or cutting teeth, being in man four above and four below; 2nd, the *canine*, scarcely distinguishable from incisors, and being two above and two below; next to them come the *bicuspids*, four above and four below; and beyond these again are the *molars*, six above and six below. But in the *milk teeth* the arrangement varies in some measure, the incisors and canines being in number and arrangement the same; but the place of the bicuspids being occupied by two molars, each of which has four tubercles. The permanent molars are not preceded by milk teeth.

1745. **After the Closure** of the capsule, the gum is also closed over it so as to form a continuous mucous surface, with a dense fibrous membrane beneath, so that the tooth, as it becomes developed, has to rise through this before it becomes apparent. The process by which this is accomplished is called absorption, inasmuch as the particles are absorbed or taken up into the blood vessels, or absorbents, as described at par 1461. Although the teeth are developed, to a certain extent, before birth, they are not so far so as to rise through the gum; and they usually make their appearance at the periods marked in the annexed table, though not with anything like certainty, as there is a very great difference observed in the periods of the teeth first cutting the gum; and, therefore, the anxious mother must not be alarmed if her child does not comply with the arrangement here set down, which is the average only. Thus, many children are not furnished with a single tooth through the gum until two years old, while others cut them first at one, two, or three months of age.

TABLE OF THE TIME OF APPEARANCE OF THE MILK TEETH.

	Months.
Central incisors are cut at ...	7
Lateral incisors	8 to 10
Anterior molars	12 to 18
Canines	14 to 20
Posterior molars	18 to 36

PERMANENT TEETH.

	Years of Age.
First molars are cut at	6½ to 7
Central incisors	7 to 8
Lateral incisors	8 to 9
First bicuspid	9 to 10
Second bicuspid	10 to 11
Canines	12 to 12½
Second molars	12½ to 14
Third molars	16 to 30

1746. **The Management of the Teeth** has a two-fold tendency, the first indication being to watch and assist their proper development; and the second, to protect them from decay; and as these two processes have each a separate stage of life during which they are prominently active, so the proper supervision of the teeth may take its tone from the period at which it is to be exercised. Thus, the mother who watches her children's teeth as they successively make their appearance, has a very different task to perform from that which is demanded by her own set; and unless she understands the nature of the charge, or entrusts it to another more competent than herself, she will, very probably, overlook much which ought to engage her attention. In the cutting of the milk teeth, there is very little cause for anxiety or interference, so far as the teeth themselves are concerned; but when the second set are making their appearance, the mother who regards the future welfare of her children, in point of comfort and personal beauty, will see that they are allowed room and space for their proper arrangement in the mouth. Children at a very early age should be encouraged to wash out their mouths and brush their teeth with a soft brush (but no powder); and if the gums are at all spongy or inclined to bleed, the addition of a little tincture of myrrh will render them more hard and healthy; but the tartar formed upon milk teeth is not of any further consequence than as showing a slight tendency to ill-health, inasmuch as it is all removed with the tooth to which it is attached. But if the first teeth are very small, and at the same time closely set, it often happens that the second set are too large for their places, and as they emerge they crowd one another so much that they cannot find room to stand in a regular row, and part, or all, fall out of the rank. When this is the case one or more teeth must be extracted; but as the incisors and canine teeth are very conspicuous, and their absence is very readily detected, it is considered better to remove the first bicuspid, which permits the adjacent teeth to extend themselves and assume a regular position. If this is done early enough, in most cases it is sufficient; but if not, a plate must be fixed in the opposite jaw in such a way as to meet the tooth in a slanting direction, and so force it into its place, or it must be brought in by strong silk, tying it to the adjacent teeth. These plans must, however, be entrusted to a skilful dentist; they are only mentioned here in order that the mother may be made aware of the fact, that by his aid she may hope to rectify the errors occasioned by her omitting to have earlier assistance. I have said nothing of the cutting of the first teeth, because whenever there is much the matter at that time the aid of a surgeon should be called in, who will at once proceed to lance the gums, if necessary; but as I believe this division is fraught with serious ill-consequences, if it is done without due cause, I should never advise the parents or nurse to attempt the operation, simple and easy as it is. The milk teeth often decay and give pain, and if so they may be removed; and in many cases, without any such destruction of substance, they will require slight interference, from their adhering to their sockets longer than is desirable, or prudent, in reference to the new teeth. In all cases, however, these fangs are absorbed before the new tooth shows itself and from this circumstance a very slight force is sufficient to remove them.

1747. **The Supervision and Management** of the permanent teeth in their *development* being completed, it is necessary to see, that after this stage they are prevented from *decaying*. It appears, that this disease of the tooth is partly due to chemical decomposition of the food lodged between the spaces in eating. When there is joined to this an unhealthy or weak condition of the ivory, which is thus rendered incapable of resisting the action of external causes, and also the continual pressure of the adjacent teeth, when too close together, this decay is almost sure to take place in some part or other of the crown. When it occurs in the sides of the necks, just below the enamel, the cause always is in the food, and generally so when in the middle of the crown of the molars; but sometimes decay takes place beneath the enamel, and long before the slightest fissure in this part can be detected by any ordinary observation, or, at all events, while there is no opening large enough to admit the food. Besides these causes, another exists in the uncovered state of the roots, or fangs, or in their being covered by tartar instead of gum, both of which circumstances tend to produce decomposition and decay, and should be cautiously guarded against. These several objects are carried out—1st, by carefully removing the food left between the teeth with a proper tooth-pick; 2nd, by brushing off both the food and tartar, at least once a day, with the tooth-brush and tooth-powder; 3rd, by attention to the healthy condition of the gums; and 4th, by allowing a dentist to fill any cavity which may occur in spite of all these precautions.

(*a*) **The Best Tooth-pick** for cleansing the spaces between the teeth, is also the cheapest, namely, that made from a piece of quill. This ought to be passed round and between all the teeth after each meal, which will also serve to keep off the tendency to form tartar. At night, a brush with water only may be used with advantage, and where there is a strong tendency to decay between the roots, a piece of strong silk may be drawn backwards and forwards between each pair.

(*b*) **In Order to Remove the Tartar**, a brush, more or less hard, should be used every morning, with some tooth-powder on it, unless the enamel should be very thin indeed, in which case the powder should be avoided, as being likely to do damage by wearing that material away too fast. The tooth-powder (for which a receipt is given at page 421) is a very valuable one for the removing of tartar, and has a considerable preservative effect upon the teeth, so that even decay is arrested in some measure by it. I have known it used by one family for more than fifty years, and with a remarkable degree of success in preserving to all a good set of teeth up to the age of seventy-five or eighty.

(*c*) When the gums adhere firmly to the teeth, and leave nothing visible beneath the enamel, the conclusion may be drawn that, in point of health, the mouth is in a good state; but if they recede, they should be attended to. Tincture of myrrh is an excellent application for the purpose, and a mixture of it with a solution of chloride of soda and Eau-de-Cologne, in equal proportions, and used on the brush, will generally be efficacious, unless the general health is also greatly at fault.

(*d*) **When a Cavity** is actually developed, the sooner it is filled the better. When it is small, and has not opened into the natural cavity of the tooth, gold-leaf is the best material, the dentist previously cutting away the decayed matter, and pressing in the gold with great force. When, however, this cavity is exposed, gold is useless under ordinary circumstances, and the highest efforts of the scientific dentist are alone capable of making the tooth useful, and at the same time relieving its pain. In the present day, few dentists are able to effect this difficult task; but I believe there are some who succeed in almost all cases, and I know that it has been done in some few. The usual resource is the application of an amalgam of mercury with silver while in a soft state, which, moreover, sometimes arrests decay for many years, and also relieves the pain; but in most cases it fails in its object when applied in an advanced stage, and is unworthy of any strong reliance.

Sect. 4.—Management of the Extremities.

1748. Little is to be said about the feet and hands, because they do not require much to be done for them beyond that cleanliness which, it is to be hoped, it is unnecessary to inculcate. With regard to the feet of children, it is a great mistake to shoe them in a careless way, if, as is generally the case, a good-looking foot is to be considered of any importance. Tight shoes are bad in every way; first, by their causing an awkward and shambling carriage; and, secondly, from their producing corns and bunions, which are worse defects than a large and spreading foot. Mothers should, therefore, watch the growth of the feet, and supply new shoes as soon as they are too small; a very constant source of annoyance is the reservation of a pair of *best* shoes until the foot outgrows them, as it generally will do in six months; it is therefore far better to keep only one or two pairs going at a time, and sacrifice present appearance to the future welfare of the child.

1749. IN CUTTING THE TOE-NAILS of the child, the nurse, or mother, is very apt to clear out the corners in the same way as she would cut those of the hand. This is a mistake, as the pressure of the shoe has then always a tendency to curl the nail in at the corner, and produce serious inflammation and mischief. The nails of the foot ought to be cut *straight across*, or, indeed, scooped out a little in the middle; and if this plan is adopted very few nails indeed will be found to grow in. On the other hand, the nails of the fingers may be nicely rounded, though in children they ought to be kept rather short, to avoid the accidents which are otherwise apt to occur, both to the nail by its fracture, and to the skin by contact.

1750. CORNS are very constant sources of annoyance, and in children may generally be avoided by attending to the shoes, which press unequally, from not fitting. Many mothers, to avoid this, used formerly to change the shoes daily, from right to left; but though in theory very correct, the practice is defective, because no shoe can be made to fit both feet, from the natural curve which each makes outwards in the middle. It is, therefore, more frequently the cause of corns than a cure for them, and in the present day is wholly out of fashion. When they are developed to such an extent as to cause pain, they are to be removed with the scissors or knife, a small piece at a time, and kept moist with glycerine, or with a piece of soap plaster, which prevents that harshness and dryness so often the main cause of the pressure not being borne.

BOOK IX.

THE DOMESTIC MANAGEMENT OF THE LYING-IN ROOM AND NURSERY.

CHAP. I.—THE LYING-IN ROOM.

SECT. I. GENERAL OBSERVATIONS.

1751. PREGNANCY in the female of these climates, with the exception perhaps of some few very robust individuals, is attended with certain uncomfortable sensations and complications, which are peculiar to herself. No animal, whether domestic or wild, appears to suffer the slightest inconvenience during this period; and, consequently, this exception alone marks woman out as deserving a different treatment at this time from that which might otherwise be accorded to her. At the same time a knowledge of these facts should not be strained too far; and certainly the woman who takes advantage of the sympathy of her husband, to work upon his feelings in an artful manner, is deserving of any punishment to which she may have to submit.

(*a*) SICKNESS is the most common attendant on this state, and also one of those least under control. It appears to be entirely independent of the nature of the food; and the more strict the diet, the greater the sickness in many cases. It is undoubtedly of what is called a nervous character—that is to say, we know nothing about its cause; and, therefore, the remedies which are sometimes useful can only be selected empirically, from a knowledge that in other cases they have been successful in relieving this symptom. In most cases it only lasts for the first two or three months, and seldom extends beyond the period of quickening. The best remedy is a total and fearless disregard of the thing altogether. Let the female only make up her mind that it is a common event; and let her retire and relieve herself, and then soon afterwards eat another meal, and she will generally succeed in tiring out her stomach, so as to take as much as she requires. But if she makes a fuss about the matter, and refuses to eat "because she knows that she shall be sick," the stomach being too long empty becomes weakened, and then the original sickness becomes converted into a true indigestion. A little ginger and soda (five grains of each), with thirty or forty drops of sal volatile, in a small wine-glassful of water, will be found the safest remedy, and the most generally useful among those fit for domestic exhibition.

(*b*) DIARRHŒA is another very frequent complication in the early months of pregnancy, which should at once be checked. Rice-diet, rice-water, and arrowroot, may first be tried; and if these fail, a few ounce-doses of chalk-mixture, with ten grains of aromatic confection in each, will often succeed. But beyond these, the sufferer should not treat herself, but should at once call in medical aid, as this state of things is very apt to produce miscarriage.

(*c*) TOOTHACHE often occurs in those who are exempt from sickness, and, like that complaint, is considered to be "nervous" by some. But it appears to be a fact, that the teeth are not only more subject to *pain* at this time, but they are more liable to absolute *decay*. Many women invariably lose a tooth with each pregnancy, and therefore the mischief is not to be accounted for, by simply saying that it is of a "nervous" character. Sometimes the pain is so severe as to require the extraction or stopping of a tooth, but in general it is better to postpone all operations until after the confinement, as shocks are extremely likely to produce miscarriage.

(*d*) PAINS IN THE ABDOMEN, commonly called in the side, are very generally felt towards the fifth and sixth month. They are seldom of any serious moment, and are generally dispelled by friction with a warm linament, containing laudanum and ammonia.

(*e*) CONSTIPATION is a fertile source of discomfort and inconvenience, and is partly caused by neglect of proper exercise, but in a great measure by the pressure of the child. A few grains of rhubarb (four to eight), with a grain of ginger, should be made into a couple of pills, and given with the dinner, or, if necessary, with another meal also. This is better than the constant exhibition of castor oil, which is the only alternative, for nothing is so prejudicial as the straining occasioned by constipation.

(*f*) HÆMORRHOIDS occur partly as a consequence of constipation, and partly, also, from the pressure on the veins above. They are in themselves enlarged veins, and are relieved by those means which take off the pressure above, such as gentle aperients. Sulphur is an excellent remedy, given in ten grain doses in milk, *at night*. And three or four ounces of cold water, *not more*, may be thrown up into the rectum, just before relieving the bowels in the usual way.

(*g*) Varicose Veins of the legs are very annoying and troublesome attendants upon the latter months. They are particularly common with those who stand a great deal, such as washerwomen, while active exercise appears to prevent their appearance. In such cases the stocking must be held up by the old-fashioned string to the stays, and the partial pressure of the garter avoided. Friction, gentle purgatives, and exercise will sometimes relieve them, but in severe cases it is better to prevent their getting worse by the use of the elastic stocking, which is now to be obtained at the low price of 7s. or 8s. each.

(*h*) The Terror of the approaching confinement is often a source of low spirits in young females, and especially in those who are much alone. Females in general, although they bear pain well when it comes, have an instinctive dislike to it; and when threatened, it has a much greater effect upon them than upon men, who afterwards would be, perhaps, worse patients than the weaker sex. There is also a natural desire in those who have undergone the trial to magnify their sufferings; and the greatest offence which can be given to almost any woman is to tell her that she has had a "very good time." Hence it arises that young people are often filled with an idea that, as a positive certainty, they shall have to undergo something very dreadful indeed. Whereas, the fact is, that this horrible anticipation is not often realized, though there is no doubt that in *some* cases it even equals the description previously given to them. Still I believe that the idea would be much better borne if young women were aware of the infrequency of these severe cases, and were made to understand that the chance of such an occurrence, in their own individual case, would be small indeed. With regard to the danger, it may be said that it is a matter of calculation; but few ladies are sufficiently versed in the doctrine of chances to understand the nature of the risk. It may, however, be stated as certainly 300 to 1 against death occurring in any young woman of fair average health, who is well formed, and who will have the advantage of fresh air, good nursing, and a mind free from care. In those who are not so favourably situated, the mortality is increased to 1 per cent.

(*i*) Miscarriage is a very frequent accident in a first pregnancy, occasioned partly from a neglect of proper precaution, and partly from other natural causes. Whenever it is threatened, great quiet should be enjoined, and the recumbent position on a sofa strictly maintained. Horse-exercise is a frequent cause, either from its being continued from a dislike to give it up, or from a fear lest the fact of its being discontinued would be an announcement of the state which, in young women, is sometimes greatly disliked from foolish feelings of mock-modesty. They should remember, that it is a state honourable in itself; and though there is no occasion to parade it, yet certainly it ought never to be concealed by any precaution, which leads to the injury of either mother or child.

Sect. 2.—Preparations Required.

1752. As soon as the pregnancy is undoubted, the monthly nurse should be selected and engaged. Some ladies begin to think of this official very early, and I have sometimes been met by the nurse with the assertion, "Oh, Sir, I am engaged up to ——," mentioning a month nearly *ten* months off. Undoubtedly, some ladies breed so regularly, that they may really do this without much chance of error; and where a particular nurse is a great favourite, it is, I verily believe, sometimes done. But, besides the nurse, it is necessary to prepare baby-linen, and other things, too numerous almost to mention. The chief, however, being the two grand essentials, *Nurse* and *Baby-linen*.

1753. The Nurse is really an important personage to the welfare and comfort of the expectant mother; for she is as completely mistress of a house as any autocrat is master of his dominions. Everybody and everything gives way to her, except the doctor, *when present;* for, as soon as his back is turned, he is too often deposed from his throne. Now, this authority and power is very desirable, if placed in trustworthy hands; and, on the other hand, it often leads by its abuse to fearful, and even fatal results. From the long habit of control, the *old* nurse cannot bear to be thwarted, and very often on the slightest attempt she flies into the very reverse of what she is wished to do; and in carrying out her intentions is controlled by no fears but for the discovery of her plans, which she generally manages to conceal. Many a sensible woman has been restrained by a fear of her nurse from making known to her medical attendant the absurd deviations from her directions, which the nurse has indulged in from a mere sense of the necessity of showing her own importance; but so absolute is the empire established, that even in the absence of the temporary mistress the patient would not dare to divulge what she knows is wrong, and in her presence such a feat is wholly out of the question. For these reasons, I am inclined, from long experience, to dislike an old nurse; by which term I do not necessarily imply an old woman, but one who is old at her calling, and who flatters herself, from her experience, that she is quite as knowing as the person who ought to be her superior officer. There is really so little for a nurse to exercise her intellect upon, that a very little experience in these matters is enough; and I am satisfied that very few nurses are worth having after more than five or six years' practice. Where they are sensible enough to know their places, after this experience, they are invaluable; but the exceptions are so rare as to be almost out of the calculation. If the medical attendant knows his duties, and attends to them, the nurse will have very little to do with her mistress; and the wants of a young baby are confined to such a limited circle, that they are soon mastered by any person of ordinary common sense. For these reasons, therefore, I should advise the selection of an active and intelligent person, of pleasing manners, not too talkative, nor, on the other hand, of a desponding disposition, who has had from two to five years' practice, and has in her youth been accustomed to children, either in her own family or as a nurserymaid in that of a mistress. She should be *sober*, if possible; though, unfortunately, this quality is seldom to be met with in full perfection. And this can scarcely be wondered at, when the nature of the calling is considered. Nurses, on the average, are kept out of bed for two or three nights together, in every fresh situation; and must therefore be tired, and yet anxious to appear cheerful and ready to do what is wanted. To effect this praiseworthy object, a *dram* is taken, which soon loses its effect, and is speedily followed by another and another, till the habit becomes confirmed, and is carried on throughout the month at a time when the regular occurrence of good nights affords no excuse for such an indulgence. If possible, however, sobriety should be insisted upon; and, at all events, no one would be right in choosing a nurse with the full knowledge that she was addicted to excess in spirituous liquors.

1754. THE USUAL WAGES OF MONTHLY NURSES are from one guinea to three guineas in the country for the month, and from the lower sum up to five or even ten in London; though these sums are not paid except by the very wealthy. If the attendance is extended beyond the month, from five to ten shillings per week are usually paid in proportion to the original sum agreed upon; and of course for the five or ten-guinea ladies at least one guinea per week is the proper refresher.

1755. THE OUTLAY FOR BABY-LINEN will vary very considerably, according to the state of the parents; the absolute *necessaries* being comparatively few and inexpensive, and it is only from indulging in finery that the future mamma is induced to lay out more than can be afforded by her husband. A great part of this expenditure formerly consisted in that for the caps, which are now generally dispensed with, experience teaching that the head is a part which is much better kept at as low a temperature as the room ought to be at, where a baby is. Where there is a very great draught of cold air in the winter, as in the cottages of the very poor, a cap *may* perhaps be an advantage; but in all above that class there is no doubt that its tendency is to encourage mischief in the brain, attended with fits. Certainly these troublesome complaints have become much less frequent of late years than was formerly the case; and this change is mainly due to the abolition of caps. The following lists comprise those things which are necessary and suitable for each class of persons already so often alluded to, viz.:—1st, those spending £100; 2nd, £250; 3rd, £500; 4th, £1000 per annum; and which are throughout the subjects of observation in this book.

(*a*) BABY-LINEN SUITED FOR £100 A YEAR:—

	MADE AT HOME.			READY MADE.		
	£	s.	d.	£	s.	d.
Six night-gowns	0	10	6	0	17	6
Six shirts	0	8	4½	0	6	0
Four long flannels ...	0	10	6	0	19	8
Two flannel squares ...	0	5	0	0	7	0
Four barrows	0	1	9	0	4	0
Three swathes	0	1	6	0	2	3
Three dozen diapers ...	1	10	0	3	0	0
Three flannel ditto ...	0	3	0	0	5	0
Tapes, &c.	0	0	10½		—	
Flannel binding	0	2	0		—	
Hair-brush	0	2	0	0	2	0
Three pairs of boots ...	0	1	0	0	1	6
Powder and box	0	1	6	0	1	6
	£3	13	0	£6	6	5

These calculations are, of course, made upon the most economical scale, everything being new, and good. The *night-gowns* are of corded muslin, at 1s. per yard; and, if nicely made and frilled, will look very well for the day as well as night; and by allowing the child to wear a clean one in the day during the first half of the week, and then wear the same at night during the second half, some saving can be made in the washing, and there will be two spare ones in case of accidents. The *shirts* are made of lawn, at 1s. 6d. per yard, and will admit of as much stitching as the mother likes; but no work, or lace. The *long flannels*, at 1s. 9d. per yard, will take about four yards of mixed silks, and cotton binding at 1d. per yard. The *barrows*, or *baby flannels*, are also made of the same priced flannel as the first; the *swathes* of a rather finer flannel. They should be made of either a very fine Welsh, at 3s., or Saxony flannel; the latter is the softest. The *diapers* are 8d. per yard; but if there are any old table-cloths ready to be cut up, nothing is so nice and soft for this purpose. A sponge is not mentioned, as many nurses prefer a piece of flannel, either old or new, and, of course, that is cheaper than the sponge. Three or four skeins of wool will serve either to knit or crotchet a pair of socks. No common pins should on any account be used; when tapes cannot be made to answer, the shielded pin, sold for the express purpose, is the only safe article. It will be found, that, though the ready-made clothes cost more, the materials are not *nearly* so good as those bought and made at home. So much depends upon the workmanship of these little articles, and a good pattern, that neat stitching and sewing will make the coarsest garment look well. Nothing is said about robes, as they may be considered luxuries, not necessaries, and can very well be dispensed with.

(*b*) BABY-LINEN SUITED FOR £250 A YEAR:—

	MADE AT HOME.			READY MADE.		
	£	s.	d.	£	s.	d.
Three robes	0	15	0	1	10	0
Eight long gowns	1	2	6	1	12	0
Six shirts	0	5	4½	0	18	0
Three day-flannels ...	0	12	0	0	18	0
Three night ditto	0	7	10½	0	14	9
Four barrows	0	1	9	0	6	0
Three swathes...		...		0	2	6
Three flannel squares ...	0	10	0	1	0	0
Three dozen diapers ...	1	13	0	3	0	0
Three flannel ditto ...	0	4	6	0	6	0
Two petticoats	0	2	8	0	5	10
Tapes, binding, &c... ...	0	3	0		...	
Hair-brush	0	2	0	0	2	0
Three pairs of boots ...	0	1	0	0	3	0
Powder and box	0	2	0	0	2	0
	£6	2	8	£11	0	1

The *swathes* are not put down, as they should be taken from the long flannels; the robes must also be made at home, and can be braided to look very pretty. With a little narrow lace round the body and sleeves, the remarks applied to the list for £100 a year will apply to this, except that the materials are rather more expensive in proportion to the increase of income. Only three robes are mentioned, because the long gowns, if well and prettily made, are quite sufficient. If the child is born in the winter they are warmer; and if in the summer, it is so soon short-coated that it is not worth while to go to the expense of robes, which are a very costly article.

(*c*) BABY-LINEN SUITED FOR £500 A YEAR:—

	MADE AT HOME.			READY MADE.		
	£	s.	d.	£	s.	d.
Six robes	2	10	0	10	10	0
Eight long gowns	1	7	0	2	14	0
Six shirts	0	16	6	1	10	0
Three day flannels	0	15	0	1	1	0
Three night ditto	0	10	6	0	16	6
Four calico petticoats ...	0	8	0	0	18	0
Four barrows	0	3	0	0	6	0
One cashmere shawl ...	0	10	0	1	1	0
Three flannel squares ...	0	15	0	1	10	0
Three swathes		...		0	4	6
Four dozen diapers ...	2	0	0	4	0	0
Three flannel ditto ...	0	4	6	0	10	0
Tapes, binding, &c. ...	0	1	0		...	
Hair-brush	0	2	6	0	2	6
Powder and box	0	2	6	0	2	0
Sponge	0	5	0	0	5	0
Four pairs of boots ...	0	1	0	0	3	0
	£10	11	6	£25	13	6

In this list the materials are still finer than in the last. Of course, the ready-made articles may be obtained more cheaply; but excepting the robes, I do not think their materials will be at all equal to those made at home, nor will the work be so good.

(*d*) BABY-LINEN SUITED FOR £1000 A YEAR:

	MADE AT HOME.			READY MADE.		
	£	s.	d.	£	s.	d.
Eight robes	6	0	0	24	0	0
Eight monthly gowns...	1	15	0	6	0	0
Six night-gowns	0	12	0	2	2	0
Four day-flannels	1	6	0	1	14	0
Four night-flannels ...	0	18	0	1	0	0
Six calico petticoats ...	1	2	0	2	2	0
Twelve shirts	2	0	0	4	4	0
Four barrows	0	4	0	0	8	0
Three swathes		...		0	3	0
Two Cashmere shawls	1	4	0	3	0	0
Four flannel squares ...	1	0	0	1	14	0
Five dozen diapers ...	4	10	0	5	0	0
Four flannel ditto	0	6	0	0	12	0
Carried forward ...	£20	17	0	£31	19	0

	£	s.	d.	£	s.	d.
Brought forward ...	20	17	6	51	19	0
Tapes, &c.	0	2	0		...	
Hair-brush	0	4	0	0	4	0
Powder, &c.	0	3	6	0	3	6
Sponge	0	7	0	0	7	0
Six pairs of boots	0	2	0	0	9	0
	£21	15	6	£53	2	6

The ready-made articles may be higher in value, but the materials to be made up at home are of the very best quality. Hoods vary from 4s. to 30s.; and cloaks, from 12s. to £4 4s.; but as they are generally bought after the birth of the child, I have not thought it necessary to introduce them in the lists. Neither have I inserted caps. They are so little used now; and are not only unnecessary, but even disadvantageous to the health of the child. When children are short-coated, it is a good plan to tack their clothes together; it saves trouble, and makes them look neater, as they keep in place better.

1756. A BASKET, of an open shape, is usually purchased to contain these articles; but as it is sometimes omitted, from motives of economy, it is not included in the estimate. In every case, either it or a small drawer, or some similarly convenient receptacle, must be provided, as it will be impossible for the dressing to be properly conducted without something of this kind. The price of the ordinary basket varies from 2s. 6d. to 12s. 6d.

1757. THE CRADLE, and other *et ceteras* of the lying-in-room, are not very expensive. The cradle *may* be purchased for one pound, or it may be made up so expensively as to cost ten or twelve guineas. It is, in fact, a luxury, and not essentially necessary, as many young couples are content to put their offspring in a large basket, one of which fit for the reception of a young baby is to be met with in most houses. Two or three guineas may be considered the usual expenditure for this article, when it is indulged in. The mattress for the cradle is best made of wool, which is warm and capable of being cleaned. For the poorer class a chaff mattress answers very well, and the chaff is readily changed when soiled; but, from being a good conductor of heat, it is cold, and to avoid this requires a blanket to be doubled and laid upon it. Extra sheets, blankets, &c., are generally provided, though these are only wanted in very small establishments, as in larger ones there are usually enough to answer at this time. A bottle of brandy is also a requisite, as it may sometimes be wanted at a minute's notice, and its deficiency may make the difference between life and death. It is also, by most people, used externally for both mother and infant.

1758. A ROOM should be selected as airy as possible, and it should have a fire-place in such a situation that a fire can be lighted in it with safety. In many cases a large four-post bedstead is put in a small room, and the consequence is, that the bottom of the bed is only three or four feet from the grate, so that a fire lighted there is positively dangerous. When rooms are so small as this they should have the bed differently arranged, that is to say, if there is no larger one in the house; but, when it is recollected that human beings are to be shut up for days together in this space, it will at once appear that any temporary sacrifice of comfort ought to be made which would permit of another room being used. It is always desirable at these times to have both sides of the bed free from the wall; but if the room must be of the size indicated above, it is, perhaps, the only feasible plan to place the side of the bed against the wall, and so give room to light the fire with safety. Bed-hangings are at all times useless incumbrances, and at these times are more than usually obnoxious, as there is never any reason to avoid fresh air, and they can only serve to obstruct it. In every way, therefore, room should be made by removing these hangings, as well as the window curtains, and any chests of drawers, or other articles of furniture, which can be dispensed with.

SECT. 3.—MANAGEMENT OF THE MOTHER.

1759. If the female expecting her confinement has secured a nurse answering to the qualities above described, and has also a doctor engaged to attend her, in whom she has reason to place confidence, she may consider herself fortunate, and need trouble herself very little about any other assistance. The society of a female friend is no doubt a consolation and comfort in these trials, but that one which seems to be the most frequently selected is generally the worst adapted to afford it. A daughter naturally looks to her mother, and she should do so certainly now if the mother's feelings could always be controlled; but in these circumstances it generally happens that she feels too much, and is consequently unable to keep up the spirits of her charge, so that instead of exhibiting a cheerful and encouraging countenance, she is inclined to emulate the patient in giving way to her tears. If all goes well it matters little who is by; but in case of any complication, she is very properly consulted, and is unnerved and anxious, instead of showing calmness and confidence. All this re-acts upon the patient, and for these reasons, which I have seen exemplified in scores of cases, I should never advise the selection of a mother as a comforter, at the hour of trial, unless she is of unusually firm nerve and calm disposition. It is not desirable that she should be merry, for nothing is so aggravating as a light, careless tone at these times; but that she should be able to control her feelings, is of the utmost importance. Men are always in the way at the hour of trial, and the more the husband can be ignored the better. Of course, his natural anxiety will keep him within reach, and if he is ready to act in case he is wanted to fetch assistance, it is all that he can or ought to do.

1760. EVERY ONE AT THESE TIMES ought to have the assistance of a competent person, who is initiated into the mysterious processes connected with the birth, washing and dressing of a child; and, therefore, they may well be passed over, and we may assume all this done, and the first day of the young thing's life completed. Afterwards, however, begins a part in the management of both mother and child, which is of no little importance, and requires the superintendence of both doctor and nurse, who should, if possible, pull together. In the present section, the treatment of the mother is the part which will be described; and in this account it may be necessary to remark, that the day after the confinement is reckoned the *second day*, the day after that the *third*, and so on.

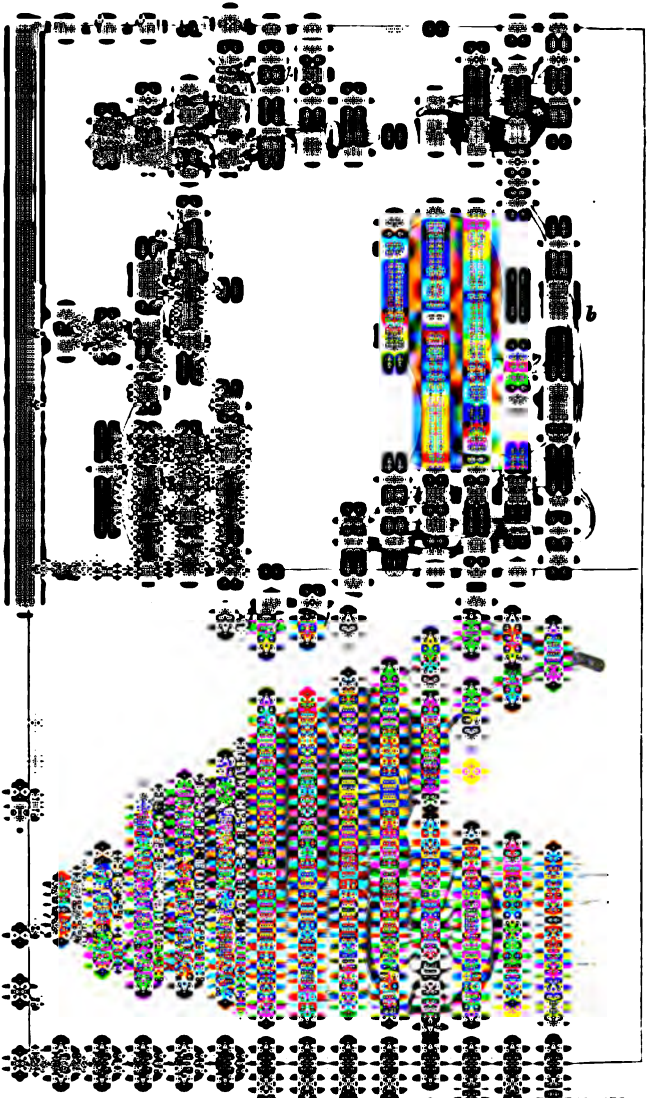
1761. GENERAL PRINCIPLES.—The management of the mother after her delivery requires considerable judgment, because she is lying in a state wholly different from ordinary disease, and yet demands quite as much care as if she were afflicted with it. There is, at this time, a great tendency to fever, but as yet it certainly has not made its appearance, consequently the treatment necessary for fever is out of place, and might even produce what it is intended to avoid. The truth is, that, in healthy young women, there is nothing beyond a natural process, which only requires eight or nine days' rest in the recumbent position, with two or three of low diet, to remove all risk of dangerous consequences. It is only in those who are diseased, or distorted, that mischief should be expected as a regular result; and in them extra precautions ought to be taken. That unnatural development of the nervous excitability, which is sure to attend upon high living with little exercise, and accompanies those who indulge in heated rooms and midnight dissipations, may be looked upon as disease; and it is in those who are subject to these particular conditions of the nervous system that the most serious complications occur. But leaving these out of the question, I shall now proceed to describe the proper domestic treatment at these times, by the aid of which ninety-nine healthy women out of every hundred may be brought through the period we are now considering, without requiring more than a dose or two of castor-oil.

1762. THE STRICT MAINTENANCE OF THE RECUMBENT POSITION is the most important of all the precautions to be taken, and without it no one can for a single day calculate upon a freedom from inflammation. The column of blood above the pelvis is of considerable height, to say nothing of the force of gravity in other matters; and this column acting downwards fills the vessels, and causes a tendency to congestion or inflammation, which leads to the most serious results. From a long experience I am convinced that a woman will do better if she neglects every other precaution and attends to this, than if she runs counter in this respect, and is perpetually sitting up in bed, or even walking about her room. On the second day many women feel so strong and well that they are tempted to get out of bed "to feel their legs," and fancy they are quite themselves again; but so surely as this is attempted comes a reckoning on the third or fourth, at which time they can scarcely sit up from pain or other inconvenience. It is a great trial of patience, I allow, and appears for the first ten days to cause great loss of strength, for even a person in perfect health cannot lie down for nine days strictly without feeling faint at first sitting up or walking. This, however, soon goes off, and at the end of the fortnight the strength is regained to a much fuller extent than if the bed had never been kept at all. Every succeeding confinement makes this position still more necessary, for reasons which every mother will readily comprehend. Let me therefore repeat, that every woman who wishes to regain her health entirely, *without any discomfort or drawback*, should never raise her shoulders off her pillow for nine days after her delivery; and the same applies to a miscarriage; in fact, the rule is even more necessary at that time.

1763. THE ESTABLISHMENT OF LACTATION is the turning point of the lying-in-room, upon which depends the freedom from fever or inflammation in most cases. In a state of the highest health, this process is ushered in by a slight accession of fever; and if that does not show itself, the lactation is imperfect, or if it is allowed to run on too high, the secretion is forthwith checked. As a consequence, it may be inferred that it is desirable to avoid too great a depression of the system on the second day; but the moment the feverish symptoms appear, quiet and starvation are the essentials to success. A little cheerful conversation, and, sometimes in delicate patients, a basin of chicken or veal broth, may be allowed on this day, unless the breasts are becoming full, or there is evidence of fever in the increased frequency of the pulse. The safest plan, in most cases, is to keep to tea and bread and butter, with gruel only, until after the breasts are quite soft and comfortable. Aperient medicine should never be given until the milk is making its appearance pretty freely, which is generally on the morning of the third day, when a dose of castor-oil will almost always be needed. If, therefore, there is an impediment to this secretion, the aperient must be postponed until the fourth day, and the food must be improved to such an extent as is advised by the medical attendant. By impediment to the secretion of milk is not to be understood any obstruction in its *flow*, for that would be a most injurious mistake, requiring exactly an opposite treatment. The secretion for its establishment demands a slight increase of the powers of the system beyond their usual condition, and if these are not inclined to rouse themselves, they must be aided in the way I have mentioned; but when once the breasts have become full and hard this stage is accomplished, and the efforts of the nurse must now be directed to procure the flow of the milk by all the means in her power, unless it is determined to avoid suckling, when the opposite course must be taken.

1764. TO PROCURE THE FLOW OF MILK so that the child can help herself, is an art not easy of acquirement, without the actual demonstration of one who has already achieved it. It may be supposed by some people, that nature has provided the child with power to get her own supply, and so, in all probability, she has in her own dominions; but, in the present state of society, from the pressure of the stays carried through several generations, the nipples are so shortened and injured in their development, that, if left to itself, many a child would actually starve. This I have myself tried on more than one occasion, having imbibed the theory, among many others of a similar kind, that the child would sooner or later manage for herself. The worst part of the predicament is, that every hour's delay makes it more difficult for the child; and there is no help, unless the nurse or some other person sets to work and brings away the first part of the secretion, after which the child fastens readily enough. But in this there is great difficulty, because there is an absence of that natural "draught of milk" which is caused by the desire of the mother to afford nourishment to her baby. The same difficulty is sometimes experienced in milking the cow, who often takes a dislike to her milker, and will not give down her milk; not that she has any muscular power by which she can restrain it, but she does not desire to yield it, and, as a consequence, it is not yielded. Even if a strange child is brought to the young mother to perform the office, and has twice or thrice the strength of her own, the instinctive reluctance to give sustenance to a stranger is still in play, and, in the language of the nursery, "the draught does not come." The nurse *must*, however, persevere, either with the aid of pumps or the mouth, in drawing out the nipple; and to aid this steady and pretty strong pressure of the base of the breast is the best means in her power. Taking one in both hands, and, as it were, raising it from the ribs, she surrounds its base, and steadily, yet without undue force, she proceeds to force out the contents, using suction at the same time, with the pump or mouth. The India-rubber pump (*fig* 145 A) is far the best for this purpose, as its exhausting power is more steady than that afforded by the human hand, or the old glass tube represented at (B), and used with one end in the mouth. By persevering in these plans, together with a gentle rubbing of the breast, the milk is generally made to flow tolerably readily, and as soon as it does so the child should be applied; but for the first three or four days it will be necessary to begin and *end* also in this way, each time the child is to be suckled, as it is very important to empty the breast completely. At this early age the child will require the breast every two or three hours, which, taking them alternately, will relieve each every four or six hours.

1765. WHEN THE BREASTS ARE TO BE DRIED, it will be necessary to begin the morning after delivery, by rubbing them with equal parts of spirit and oil. The latter is only useful to aid the friction, which should be steady, slow, and deep, not of the surface only. The spirit may be either camphorated spirit, or brandy, or whisky, or Eau-de-Cologne. Some nurses use a stimulating plaster; but the friction with oil and spirit is far the best plan. If they become very full and hard, or what the nurses call "wedged," it will sometimes be necessary to relieve them by the method of drawing described in the last



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section. During the stage in which this drying process is going on, and until the milk is comparatively gone, the diet must remain low, nothing but tea and gruel being allowed, and an aperient should be given every other morning. If more cooling medicine than this is required, it will of course be administered by the medical attendant.

1766. IN ORDER TO AVOID THE ABOVE TROUBLESOME CONDITION of the nipples, many pregnant women wear shields, or glasses (see *fig.* 146), which take off the pressure, and encourage the development of the nipple; but although this may be of some slight use, it is not adequate to the task, even though aided by suction, either natural or artificial; and there will be nearly as much difficulty at last as if no steps had been taken. During lactation, however, they may be worn to encourage the continuance of the nipple in a prominent form; though even then half a minute's suction does more than an hour's wearing of the shield.

1767. SORE NIPPLES are a constant source of pain and annoyance, and in some women no precaution will prevent their appearance. Frequent suction, previous to delivery, is the best remedy, as it accustoms the skin to the alternations of moisture and dryness, which seem to occasion this state. A common cause is the mismanagement at the time of the milk first coming, when anxious mothers and nurses are too apt to be constantly meddling with them, by putting the child to them, and other experiments. The nipple should always be allowed from four to six hours' rest; and when this is done, it will seldom give way. If, however, in spite of every precaution, it becomes chapped, the best remedy is glycerine, which is neither disagreeable to the mother, nor dangerous to the child. It gives little or no pain, and may be kept constantly applied, first wiping the cracks quite dry with a soft piece of cloth, or muslin. If the Belmont glycerine is used, it is so devoid of smell as to occasion no disgust even to the most sensitive nose. Collodion is also a very useful remedy, but it occasions very considerable smarting, and is not equal to the glycerine.

1768. WHEN LACTATION is fully established the diet is gradually improved, so that by the fourth or fifth day a little animal food, in the shape of broth, may be allowed. On the sixth, a little chicken or white fish may be given, followed on the next day by a chop; and, if the milk comes freely, a little wine and water, or malt liquor. After this the diet may be made gradually more generous, until the ordinary food of the class in question is reached. On the tenth day the nurse should get her mistress dressed without stays, and let her reach a couch, to which she will probably have some difficulty in walking; but gradually increasing her distance, in a day or two there will be no difficulty in progressing about the room, or on any level ground.

1769. IN THIS COUNTRY IT IS USUAL for the female, after parturition, to avoid showing herself in public until she has returned thanks to the Almighty in church for her safe delivery; and this rule is, according to established custom, complied with somewhere about the third or fourth week; after which the more air and exercise which can be taken the better for the health of both mother and child.

1770. THE DIET OF THE SUCKLING FEMALE should be highly nourishing, but not heating. Many mothers are able to produce milk enough for their children without any food but that afforded by meat, bread, and vegetables, with tea and milk; but others, who have always been accustomed to fermented liquors, cannot be made to supply enough without it. Although, therefore, in *theory* alcohol is of no use in forming milk, which is full of nitrogen, and cannot therefore proceed from the alcohol, yet it is in some way serviceable in producing it, and probably by its stimulating effect upon the nervous system. I have often tried water only, and have found in many cases that without malt-liquor the milk is scanty and poor, whereas the addition of a pint or two of that article will cause the secretion of twice the amount of milk, which at the same time is vastly improved in quality. Meat and meat-soups, milk, and especially weak tea, with plenty of milk and sugar in it, are the best forms of diet; and in addition good fresh malt-liquor, free from the adulteration of the public-house. I am, however, quite satisfied that milk produced by the over-stimulation of large quantities of stout or wine is much more unwholesome to the child than artificial food; and the mother who has recourse to them to avoid that alternative does harm to her child as well as herself. It is far better to wean the former, and trust to dry-nursing, than to fill it with milk the produce of a system saturated with alcohol.

1771. OVER-LACTATION.—Some mothers are troubled with an excessive flow of milk, by which they are exhausted to a terrible degree. Extra support by food and malt-liquor often seems only to increase the flow, and does quite as much harm as good. When, therefore, this state is carried to

section. During the stage in which this drying process is going on, and until the milk is comparatively gone, the diet must remain low, nothing but tea and gruel being allowed, and an aperient should be given every other morning. If more cooling medicine than this is required, it will of course be administered by the medical attendant.

1766. **In Order to Avoid the above Troublesome Condition** of the nipples, many pregnant women wear shields, or glasses (see *fig.* 146), which take off the pressure, and encourage the development of the nipple; but although this may be of some slight use, it is not adequate to the task, even though aided by suction, either natural or artificial; and there will be nearly as much difficulty at last as if no steps had been taken. During lactation, however, they may be worn to encourage the continuance of the nipple in a prominent form; though even then half a minute's suction does more than an hour's wearing of the shield.

1767. **Sore Nipples** are a constant source of pain and annoyance, and in some women no precaution will prevent their appearance. Frequent suction, previous to delivery, is the best remedy, as it accustoms the skin to the alternations of moisture and dryness, which seem to occasion this state. A common cause is the mismanagement at the time of the milk first coming, when anxious mothers and nurses are too apt to be constantly meddling with them, by putting the child to them, and other experiments. The nipple should always be allowed from four to six hours' rest; and when this is done, it will seldom give way. If, however, in spite of every precaution, it becomes chapped, the best remedy is glycerine, which is neither disagreeable to the mother, nor dangerous to the child. It gives little or no pain, and may be kept constantly applied, first wiping the cracks quite dry with a soft piece of cloth, or muslin. If the Belmont glycerine is used, it is so devoid of smell as to occasion no disgust even to the most sensitive nose. Collodion is also a very useful remedy, but it occasions very considerable smarting, and is not equal to the glycerine.

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1771. **Over-lactation.**—Some mothers are troubled with an excessive flow of milk, by which they are exhausted to a terrible degree. Extra support by food and malt-liquor often seems only to increase the flow, and does quite as much harm as good. When, therefore, this state is carried to excess, it is better to wean the child, and give up the suckling altogether; but, if possible, the attempt should be made to keep up this kind of support to the child until it is five or six months old, as by that time it has gained strength and can bear weaning with impunity. Bark seems to exercise some little power over this excessive flow; but it cannot be depended on as an effectual remedy, nor is there in the whole range of the *Materia Medica* any drug which is serviceable to any great extent without possessing powers so great and obnoxious to health as to produce worse mischief than the original state for which it is to be used; if, therefore, simple remedies are not efficacious, the only plan is to wean the child.

1772. A Certain Degree of Quiet is desirable, but it is a very common mistake to darken the lying-in-room and shut it up closely from the air. Both of these plans are prejudicial, inasmuch as they increase the irritability of the nervous system by depriving the eyes and lungs of their proper stimulus. Unless, therefore, the brain is affected by convulsions, or their premonitory symptoms, the light should not be darkened, and the room may be made cheerful and airy, though still warm enough for the young infant, and also so comfortable as to allow of the mother's arms being out of bed, which, I believe, is a good practice in almost all cases.

Sect. 3.—Management of the Infant during "the Month."

1773. Under this section is comprised the management of the infant up to the end of "the month," by which is meant the first month; after which the plans are considerably modified in many respects.

1774. The Various Articles Used for the Child are somewhat numerous, and require notice in one group, because, unless they are at hand when they are wanted, great inconvenience occurs. It must be remembered, that a monthly nurse has not always an under-servant to wait upon her; and in many instances, although she is "mistress of all she surveys," yet her subjects are all comprised in two helpless objects, neither of whom can, or ought, to fetch what she wants. Everything, therefore, should be put ready to her hand, or, at all events, should be arranged in a closet so that she can get at them. The following list will comprise everything, except what are enumerated with the baby-linen at pages 556 and 557. The names of most of the undermentioned articles explain what they are intended for, but some few of them require a slight explanation, which is given in the paragraphs following it.

Articles Required for Infant Management:—

	£	s.	d.		£	s.	d.
1. A low chair, with or without rockers...	0	6	0	to	1	10	0
2. A foot-stool	0	1	0	to	0	10	0
3. Two thick flannel aprons	0	2	0	to	0	8	0
4. One large washing basin	0	3	0	to	0	6	0
5. One soap-dish and soap (best yellow or white curd) ...	0	1	0	to	0	2	6
6. One small enamelled saucepan	0	1	6	to	0	2	6
7. One semi-porcelain pipkin and lamp...	0	2	0	to	0	10	6
8. One pap-boat (silver or crockery)... ...	0	0	6	to	1	1	0
9. One feeding-bottle, with two or three nipples	0	2	0	to	0	3	0
10. One small jug	0	0	4	to	0	1	0
11. One tea-spoon and one dessert-spoon	0	1	6	to	0	14	0
12. One small pot de chambre, with two flannel covers ...	0	1	6	to	0	3	0
	£1	2	4		£5	6	6

1775. The Semi-Porcelain Pipkin and Lamp is a most useful modern invention, and should be introduced into every nursery, when the price can be afforded. Slight ailments are so common, and so easily magnified into great ones by neglect at their onset, that the remedies for them should be always at hand, and used without delay. Among the chief of these is warmth, in the shape either of food or medicine; and yet if a fire is to be lighted, the delay of nearly an hour will often occur; but by the use of a little pipkin, which will stand the heat of a lamp or fire, warm water and food are always at hand, and may be obtained at any hour of the night. Where gas is introduced, nothing is so readily made subservient to this purpose; but when this is not within reach, either a spirit-lamp or a common night-light may be readily fixed under the pipkin, which is supported on a sliding-stand, and is thus capable of being kept at any desired temperature. Mr. Grainger, of Worcester, has introduced a semi-porcelain, which is calculated to bear any degree of heat; and he sells the pipkin specially devised for this purpose.

1776. The Pap-boat and Feeding-bottle must not be confounded, since their intention is very different. Every child must occasionally be *forced* to take disagreeables, either in the shape of food or medicine;

and for this purpose a spoon or pap-boat must be employed, the latter being the better of the two, but not absolutely required in very young children. For feeding, however, a bottle and nipple should be used, so as to imitate the natural mode of imbibing nourishment at this age, as far as is possible. Until lately, there has been great difficulty in managing the nipple, and the teat of the cow, with its interior cut out by scissors, *was* certainly the best for the purpose; next to this came a piece of wash-leather sewn up, and containing a small bit of sponge; but both of these were open to great and serious objections, being very liable to become sour or half-putrid, and not having substance enough in the mouth. Besides these objections, they are very difficult to graduate so as to permit the proper quantity to pass through into the mouth, and altogether were accompanied with great inconvenience. But by the aid of the wonderful powers of India-rubber, a nipple is now made which is soft and smooth, almost tasteless in the mouth, especially after a good soaking and washing, and capable of being made to allow any quantity of food to pass which may be desired (see *fig.* 142). The India-rubber itself is covered with a white composition, which protects it, and takes off the disagreeable taste, so that no child which is used to it from the first objects to its being introduced into the mouth. Many of these are still made imperfectly, but by applying to any respectable maker they may always be obtained at from 4d. to 6d. a piece; but as the opening varies greatly, they should be examined on that point before purchasing, and selected according to the age of the child. A very young infant must have a very slow supply, and therefore a small hole in the nipple is necessary, which can easily be enlarged with a hair-pin or stocking-needle, but there is some difficulty in diminishing it. If such a thing should happen as a hole too large, a piece of cotton or worsted should be run through it, and tied to the neck of the bottle, after which the nipple is put on, the cotton stretched, and cut off a little beyond the end, so as to project out of the opening, and thus partially fill it up. With regard to the form of the bottle, I know of none better than the old one (*fig.* 142), which allows of the food passing as quickly as it can be sucked, without any pressure by the force of gravity. Nothing annoys and frightens a child more than pouring liquid into its mouth at the moment of swallowing, and therefore a feeding-bottle should afford it when sucked, but not in the intervals of rest to the tongue. All feeders, therefore, which are raised above the level of the child's head are objectionable, for the reason given above. A bottle has been invented by Mr. Elam, of Oxford-street, which professes to graduate the supply independently of the nipple, by passing the food through a tube before it reaches the nipple, which tube is contracted or enlarged at will by the action of an external screw. It acts exceedingly well upon milk or any fluid perfectly free from lumps; but for gruel, arrowroot, or any similar food, it is not so successful, inasmuch as the lumps with which they are all more or less infested get into the tube and block it up so as to stop the supply altogether, and occasion a constant necessity for removing it, in order to free it from them. The same thing is constantly taking place with the most simple bottle, but here the remedy is much more easy, because the pressure of the finger and thumb, as in milking, readily removes the lump, and the child can again get its supply. Several others have been introduced with a similar object, but if a complicated form is desired, Mr. Elam's is by far the best. Nevertheless, although very pretty in theory, I should very much prefer *the old-fashioned bottle, provided with a good enamelled India-rubber nipple exactly graduated to the age and strength of the child.* In this last point is the chief difficulty, but by trying several sizes one can generally be selected exactly suited to the particular case; and it will almost always be found that for plain milk and water a much finer hole will be necessary than for any of the more pultaceous compounds, which are all, also, more or less lumpy.

1777. THE FEEDING OF THE YOUNG BABY is the first thing to be attended to after its initiatory washing and dressing are accomplished. In all suckling animals but woman the milk makes its appearance with the young; and in a state of nature—that is, among savages—I believe it is also the case; but in civilized life, as before remarked, it does not show itself till the end of the second or third day; and in the interval the child has nothing to fill its stomach. Either, therefore, it must starve, or it must have some kind of artificial food; and, as young animals in thirty-six hours naturally require a good deal, the latter alternative is adopted, without which many delicate children would absolutely sink, or become so exhausted, that at last, when food was offered them, they would be too weak to take it. The first thing in general given to an infant by the nurse is a little thin and very smooth oatmeal gruel, which is a very good material for working off the black pitchy matter (*meconium*) contained in the intestines of the child at birth. Sometimes with this, and at others by itself, the nurse generally administers a couple of drops of castor-oil, which is very innocent in its effects, and though not necessary, yet there seems to be no sufficient reason to object to it. I have the greatest dislike to interfere with the proceedings of any servants which are universally customary, unless there is some valid reason to be given, and, therefore, I should not advise the omission of this practice, however unnecessary it may be. It appears to carry off the viscid contents of the bowels more speedily than by the natural mode, if not more effectually; and there do not appear to be any ill effects from it. After the first day, if the mother's milk is not come, a little lukewarm cow's milk and water, mixed in equal proportions, and sweetened with loaf sugar, should be given in a feeding-bottle with a nipple of India-rubber varnished white, described at par. 1776. By the use of this nipple the child becomes accustomed to its natural mode of sucking nourishment; and, when the mother's breast is full of milk, it soon transfers its attention to it. An infant at this age will require a little food at a time, but often—namely, every two or three hours. If the mother's milk is delayed long, and there is much difficulty in getting it to flow, the child will sometimes show some reluctance to change its feeder; but by an hour or two's starvation it will generally lay hold, and then, in most cases, no further feeding will be necessary, for at least the first month. When, however, the mother's milk is scanty, equal quantities of cow's milk and water, sweetened with sugar, or of cream and arrowroot made with water, and also sweetened, should be allowed two or three times a day, and especially during the night. Oatmeal, wheat-flour, and all such coarse articles, are unfit for the very young infant; as also are biscuits, tops and bottoms, rusks, and similar kinds of food. Nothing answers better at this early age than water arrowroot, with the addition of a little good cream and sugar; about one tea-spoonful of cream is generally enough for each quantity given at one time, and it should be mixed as it is wanted, care being taken that it is not sour. From the first, this food, whether natural or artificial, should be given at regular intervals, which may vary from two to three hours, according to the seeming wants of the child. But whatever period may be thought best it should be maintained with punctuality, unless the child is asleep, and even then it is better to take it up and feed it if it sleeps more than an hour beyond its regular time, excepting in the middle of the night, when a single feeding time may be omitted.

1778. **The Sleep at this Age** is almost constant, if the health is good; and it may generally be considered that, in proportion to its amount will be the activity of growth. It should never be interfered with to gratify either the whims or anxieties of the inexperienced mother, who will often desire to satisfy herself that her child is going on well, and, in order to do this, will be inclined to rouse it from sleep. Besides this object in awaking the child, there is also the desire to exhibit it to all visitors; and this is generally shared by the nurse, who is anxious, for her credit's sake, to show the health and strength of her charge. But unbroken sleep is of such importance, that no trivial reason like this ought ever to prompt its wilful suspension. On the other hand, restlessness may be taken as in itself a sign that there is something the matter; though, certainly, many restless babies grow up into strong and hearty children; still it is a bad symptom, and when lasting for many days together, is sufficient to call for medical advice. It may depend upon some trifling affection of the stomach, caused by improper food, or too large a quantity of that which is good; or it may be the first sign of disease of the brain, which can only be removed at this early stage. Many mothers, especially among the poorer classes, give their babies narcotics, in order to procure sleep; but the practice is a most destructive one, and leads to the death of thousands of infants every year. Syrup of Poppies, Godfrey's Cordial, soothing powders of every kind, and all the various local remedies in vogue throughout England, depend for their sedative effects upon opium in some form; and this drug, we know, is a most dangerous one for young infants, a single drop of laudanum having been known to prove fatal. When the restlessness is caused by wind, half a tea-spoonful of dill-water will very often cause sleep by removing the oppression and pain which kept the child awake; but beyond this remedy, or some other simple one of the same character, the nurse should never venture to interfere. The sleep should in a healthy child be natural in every way—that is to say, it should not be forced either by narcotics administered internally, or by a substitute in the shape of rocking. Some nurses are not contented unless their charges sleep the moment they are fed, and will not allow them to lie awake and stretch themselves for half an hour, unless there is some special occasion for their display, when the opposite extreme is had recourse to, and the poor baby is disturbed out of its proper time. Every strong and healthy infant takes some little notice of surrounding objects, and stretches its limbs and crows with pleasure; and this ought to be encouraged, for otherwise nature is not allowed her proper play. When this stage is passed, and the baby shows a tendency to sleep, or the nurse, from her experience, fancies that it will soon do so, the best plan is to put it into its cot, and to let it go to sleep *there*, either with or without rocking. No one of experience will hold the opinion that the mother's arms are not the natural shelter for her child, and therefore at first sight it might be supposed that it would be better for the baby to go to sleep there; and if early infancy only were to be considered, no one could object to it. But if allowed at that age, there is great difficulty in breaking through the habit, and therefore it is better to begin early, at a time when no habits are formed, and when the child is really quite as comfortable in his soft bed as on his mother's or nurse's lap. It is astonishing how soon children find out the way to obtain what they want, and as all infants instinctively crave for their mother's presence, so they certainly prefer her lap, and will cry for it at first, in almost all cases. But if, very early after birth, that is, by the second week, they are left to go to sleep in their cots, and allowed to find that they do not get their way by crying, they at once become reconciled, and after a short time will go to sleep even more readily in the cot than on the lap. To encourage this, rocking the cradle may be allowed; but as little as will serve to do it, and after the habit becomes confirmed it may be left off, except in cases of illness or excessive restlessness. There is no sense in the total prohibition of rocking, but at the same time it may readily be carried to extremes, as when it is made a means of addling the poor child's brains, and compelling it to remain almost constantly quiet by the physical effect which it produces. It is a most valuable auxiliary to the nursery, but, like everything else, it may be abused.

1779. THE PROPER PLACE for the sleeping of all infants, *except in very cold weather*, is, as already observed, the cradle. When, however, the child is weakly, or when the room is cold, and especially when both these causes combine together, there is not sufficient power to generate heat enough for the purpose of keeping up a proper temperature, and in such a case the mother's bed is the proper place. Generally by day, the room may be warmed sufficiently; but at night, when the fire burns low, and when the temperature naturally falls, it will be found that even a strong infant will become cold in its extremities, if left in the cradle. A warm brick, or hot bottle, placed at the feet, will warm these parts; but the arms and face continue exposed, and are generally chilled. Warmth is undoubtedly of the utmost importance to the welfare of infants; and if it cannot be provided in any other way, the mother's body must be used as a means of procuring it. The objection is, that, in the first place, it is rather too high a temperature; secondly, that there is danger of overlaying the child; and, thirdly, that the plan is difficult to leave off. In any case, it should only be adopted at night, and then with a little caution, the second named objection will not often be applicable. The use of a warm *down* pillow in the cradle for the child to lie upon, with good blankets over, and the bottle before-mentioned, will be very advantageous, and, in all but the winter months, quite sufficient to dispense with the mother's bed.

1780. THE CLOTHING should be loose, soft, and warm. By a reference to page 557 it will be found in all cases to consist—1st, of an outer-garment, variously ornamented, and named either a night-gown, day-gown, or robe; 2nd, of two flannel articles, which are pretty much the same in all cases, and called "long flannels" and "barrows;" 3rd, of the shirt next the skin; 4th, of a swathe for effecting a certain amount of pressure at the navel; and, 5th, of the diaper napkins and flannel squares. The skin at this age is so tender, that it is most readily chafed. Very fine French cambric, or lawn, is the proper material to be placed next the skin, according to the received notions of the powers that be, who assert, that anything else is sure to chafe; and yet they fasten up the lower parts of their charge in strong diaper, without experiencing this calamity. No part is so liable to chafe as the inside of the thigh, which, it is true, is often in that condition; but if this part can bear a coarser material, surely the chest and arms may be expected to do so. The fine shirt put on first, and carefully folded by the nurse, is not by any means necessary or desirable, and the time occupied in putting it on is all thrown away; but if a shirt is to be used at all, it must be fine, unless a new one is made every week or two; because in consequence of its not fitting, it must be creased, and, if coarse, the creases would certainly cause injury to the skin. The material is expensive, and therefore mothers are led to make the shirt of so large a size, that it will serve for the first six months, so that, at first, it must necessarily be too large. Now, if a fine calico were made to fit, I would answer for it, that no chafing would ensue; and the price is so trifling, that a new set once a month would be of no consequence, especially as there is very little make in this article of clothing. One great cause of mischief arises from the vanity and pride of the young mother, who is anxious to expose the neck and bosom of her child to those who come to look at it; and if she thought they could see so homely a material as calico, she would be dreadfully punished, and as a consequence the use of expensive under-garments is continued. Such an exposure of the neck is most prejudicial, especially when it is recollected that at night the dress is drawn tightly up round the throat. Day-dresses and robes ought, by all means, to come as high; and many children suffer most severely from a neglect of this precaution. Short sleeves are also objectionable for a similar reason, and should not be allowed. With regard to ornament, of course, it can do no harm; but its use should never be allowed to prevent the proper covering of the delicate limbs of the new-born babe. The only part which seems to bear exposure well is the head, and that until lately has been most carefully wrapped up in flannel caps with lace over them. It is now generally admitted, that infants thrive much better without them, and the disciples of this plan are yearly increasing in number. Long-clothes, reaching down far below the feet, are desirable for two reasons, first, because they prevent all danger of a draught of cold air up them; and secondly, because they afford a pretty sure means of preventing any unfortunate escape out of the arms in tossing the young infant, which, without this precaution, has been known to occur. At this age there is absolute necessity for a napkin, without which the clothes would be constantly soiled. Some fine lady-nurses envelope this guard in oil-silk, so as to keep all the disagreeables within; but this is a most dangerous practice, from confining the wet, and it also leads to neglect, because the nurse is very apt to leave the napkin unchanged, if it does not by its external moisture lead her to make the renewal. With regard to a covering for the feet, it is usual, and a good practice, to put on them fine knitted shoes, which preserve them from cold, and are serviceable in that way; but they are not necessary at night. Out-of-door clothing is generally that on which the mother prides herself for its finery, and in this there is no great harm; but at the same time all that is required is such an amount of warm material as to guard against the lowering influence of the temperature of the external air. Hence it is that hoods and cloaks are used, and against them no one can have a word to utter. A light piece of worked cambric is also generally placed over the face for the same purpose, and in cold weather is almost an indispensable defence. At night the infant has nothing more than it requires, namely, a fine cotton night-dress, which would be the proper and sensible clothing for the day also, and beneath this the usual long flannel and barrow, together with the swathe. Besides these, when placed in the cot, there are the blankets and quilt to keep the child warm, and with these articles the list of mechanical means employed to keep up the natural heat of the body is exhausted. It is scarcely necessary to remark, that in fastening on the clothes pins are now almost entirely exploded, one only being used for the napkin, and that of a kind which prevents the possibility of injury. The details of this subject have been more fully entered into under the head of Baby-linen, at pages 556 and 557.

1781. A CAREFUL WASHING of the young infant is all important, for, without it, the skin soon inflames and becomes ulcerated. Warm water, at the temperature of the blood, or about 96 degrees, is the proper material; and, if used below this, it produces congestion in the internal organs, often followed by other mischief. After the nurse has put on *both* the flannel aprons devoted to this purpose, the whole body should be washed, beginning with the head and face, the former of which requires no soap, then drying that part before a good fire in a warm room, and proceeding to wash the arms and chest with soap, which parts should also be carefully dried. Lastly, the lower parts require an extra degree of care, rubbing the soap on the hand into the creases, and afterwards washing it all off with the water. When all is dry the outer apron is taken off, leaving the under one comparatively free from the water used in washing, after which the powder-puff is freely used over the whole body with some scented starch finely powdered, and usually known as "violet powder;" but great care should be taken to dry the folds of the skin with a soft towel before using it. It is better to dress the child in a separate room to the mother, because the heat required to keep the former warm during this process is too high for the health of the latter. The washing ought to be repeated at night, at all events of the lower parts of the body. With these precautions, the skin of a healthy child will generally remain sound.

1782. AIR AND EXERCISE are of service even to the young infant, when the weather will permit; and, except in the depth of a severe winter, a turn in the open air ought always to be enjoined for an hour daily.

In summer, two or three hours a day will do good, but half an hour at a time is enough to begin with. A little gentle tossing in the arms is desirable, also, indoors, but not so violently as is sometimes done. Nature has not intended the infant to have much exercise, its muscles and bones being imperfectly developed; and it is at this age more of the vegetable than the animal, carrying on its functions without any necessity for the muscular contractions of its extremities. Many people object to rocking the child in the cradle, but I cannot understand on what principle. It appears to be the instinctive means of soothing the child adopted by all mothers, when they have a child in their arms; and if proper at that time, an exactly similar process in the cradle cannot be objectionable. In theory, therefore, rocking is desirable, rather than otherwise, reasoning by analogy from nature to art; and in practice, I certainly have seen no ill effects from it; but, on the contrary, I believe it one of the greatest blessings to the nursery. There is no doubt that it has a wonderfully soothing power, and if it will produce sleep, it is a great boon at all times, but especially where the infant is at all out of sorts. Syrup of poppies is scarcely more potent in its effect; but, then, that horrible resource is used by those who cannot, or will not, be at the trouble of rocking the cradle. It should be remembered that rocking is the only kind of exercise which the baby can take, without being more or less distorted; for when held in the nurse's arms the pressure is so unequal that the frame must be drawn out of the straight line. For these reasons, therefore, I give my willing adhesion to rocking in the cradle, which I believe to be far less injurious than rocking in the lap or in the arms.

1783. THE CRYING OF A NEW-BORN CHILD appears to be a necessary part of its daily life, and I fully believe that those in which it is not exhibited are almost always out of health; its absence being generally accompanied by an unusual degree of stupor. Mothers should, therefore, make up their minds to hear their infant's lungs used in this way; and they should be satisfied that they *may* be used without mischief accompanying the display. There can be no doubt, that the child cries when in pain; but the cry is very different from that sound which is given out when merely hungry or restless; and this difference should be studied by the nurse or mother, so that she may satisfy herself as to the cause; and when she finds that the crying is not from any feeling of uneasiness or pain, and knows that there is no disease of the lungs, or in the brain, or a rupture at the navel, she had better make up her mind to let her baby exercise its lungs in this way, which will afford comfort to the child, and will be followed by sound and natural sleep. Hundreds of children are kept restless from not being permitted to have their cry out, whilst if they can only get a good squall they are happy and contented for twenty-four hours, or more. Any person who has tried the experiment, will see the difference between a pent-up and coddled child, and one whose lungs are allowed to expand in a natural way; and I am quite sure that every healthy infant is injured, if it is not indulged in a good fit of crying daily, or every other day. Every animal has some degree of nervous irritability, which can only be worked off by muscular action; and though the extent of this varies a great deal, yet it is shown to some extent even in the sloth and tortoise. In those animals which feed on flesh, it is very marked; and in the birds which feed on seeds, it is also highly developed, as in our singing birds confined in cages, where they hop from perch to perch for hours together, from a mere instinctive desire to lessen the feeling. So it is with young animals, they must frolic about in some way, or they are unhappy; and in the earliest stage of human existence, the only way in which it can be worked off is by using the muscles of the chest in the active way which accompanies the squall of the child. If this view is correct, it is a cruelty to interfere with the action; and that it is so, I am as fully convinced as I am that a good walk or ride benefits ourselves, and that imprisonment within four narrow walls would be a cruelty to us. Only let the young mother look at it in this light, and try the experiment, and she will find, that in bodily health and comfort her baby will be greatly improved, while in point of moral education the advantage of disregarding the cry, on account of its want of dangerous tendency, is still greater. The young infant, though apparently taking little notice, is as cunning as many older persons, and soon finds out that a cry will bring what is desired; hence, this, the sole means of procuring it, is constantly called into play, and so the mother is terrified into granting whatever seems to be the wish of her child, whether right or wrong, simply because the cry for it is heard, and there is a fear that this cry, if prolonged, will cause an injury to some organ. In later years, this action indulged in till it becomes a disease has been known to cause even death; but no one ever heard of a young baby doing injury to itself by crying, unless at the time there was any

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semolina, and tous-les-mois are almost wholly deprived of nitrogen. All these last articles should therefore be given in union with milk, unless they are required only for a specific purpose, and are not intended to be used for many days, as, for instance, in the case of diarrhœa.

1786. WHERE THE BOWELS ARE COSTIVE at this early age, a little castor-oil is the best remedy, of which from a mere spot to half a tea-spoonful should be given in a little brown sugar. Beyond this remedy, or one or two others quite as simple, it is never right to administer medicine to the baby without the sanction of a proper and competent authority, as the complications are so great, and so difficult to detect, that neither mother nor nurse is likely to make them out. But as far as castor-oil, or magnesia, or rhubarb and magnesia are concerned, there can be little harm done; and if there is merely costiveness, without defective action of the liver, these will suffice. An ounce or two of warm water thrown up the bowel with a syringe, or a piece of soap passed for about an inch, will often cause the bowels to act, and should be tried prior to having recourse to medicine. It is usual for new-born infants to average about two motions a day; but one, if copious, and of a good colour, will be sufficient; and three, or even four, need cause no alarm, if unaccompanied by a discharge of mucus or by griping.

1787. AT THE EXPIRATION OF THE MONTH, the nurse for that period is usually no longer wanted for the management of the mistress, and concludes her duties by accompanying her to church; after which she may or may not remain a short time, in order to initiate her successor in the mysteries connected with the washing, dressing, &c., of the little stranger, who from this time may be considered a denizen of the *Nursery*, and will consequently be described as such in the next chapter.

CHAP. II.

THE NURSERY.

SECT. 1.—THE NURSERY-MAID, HER ROOM AND UTENSILS.

1788. THE SITUATION OF THE NURSERY-MAID is much more important to the welfare of the child, physically as well as morally, than that of the monthly nurse, who has hardly time to do much harm to her charge, unless she actually causes its death, which, however, is a much less serious mischief than the destruction of bodily, mental, and moral health, of which a careless and wicked nursery-maid may be the cause. Many opposite qualities are required, which it is rare to find embodied in one person. Thus, a good nursery-maid should be lively enough to amuse children, yet sedate enough to check herself and them from exceeding the bounds of prudence and propriety. Firmness on all important points should be united with that yielding to the wishes of the child which is peculiar to the good-natured person. Joined to these characteristics there must be a vigorous state of health, and yet a lively appreciation for, and sympathy with, the ailments of the child. In a word, there should be an old head upon young shoulders, a combination which would be gratefully accepted in more situations than this. The position is one which few will envy; and yet there are many young persons who go through their duties with positive pleasure, their instinctive fondness for children carrying them through them without that sensation of irksomeness which the long-continued nursing of a child invariably brings to any member of the male sex. It is, no doubt, a providential provision for the care of the infant, and we all have to be grateful for it in the early part of our lives; but too often, though sufficiently developed to induce a girl to undertake the task, it is accompanied by a total want of principle and love of deception; whilst the children cannot avoid imitating what is constantly before them, and unconsciously imbibe similar practices to those which they see successfully indulged in by her. The moment the nurse has anything to conceal from her mistress, she is compelled to enlist the child on her side, because she knows that otherwise it will be revealed on the first occasion; and she, therefore, makes herself so agreeable by bribery on the one hand and by threats of punishment on the other, that the child is induced to promise silence, and henceforward becomes an accomplice. This is the secret of half the stolen rewards, threats of "bogies," &c., which are so prevalent in the nursery, in spite of all orders to the contrary; and which, being supernatural, are called down in order to overwhelm the fear of the mother's displeasure by a still higher terror. "If you tell your mamma, the bogie will run away with you," is the surest means of causing submission, and is constantly appealed to with success. If mothers only knew to what a guidance they often resign their children at the age when impressions are most easily made, they would, in the first place, take more care to superintend the nursery themselves; and, in the second, they would investigate more closely the education and moral condition of the nursery-maid. Why do so many children dread darkness, but because they have had it peopled by their maids with all sorts of horrible forms? There is nothing *naturally* frightful in the absence of light; and the child brought up under the eye of a conscientious mother or nurse has no more fear at that time than it has in the broad daylight; so that when such a feeling exists, it may always be known that some one has been tampering with the child. A middle-aged nurse is seldom possessed of sufficient animal spirits to bear the rude assaults of a number of children, and will generally be too apt to subdue their exuberance to a level with her own staid feelings. Such, however, is not always the case; and then the nurse may be a good one, even if she is fifty years of age; and such a person I have sometimes met with, as an exception to the rule, which would perhaps assign thirty-five as the probable limit. A very young girl has seldom had experience enough to undertake a child from the month, and should commence the care of children as under-nurse, where she is as much controlled by her superior as the children themselves, and where her physical energies are of service when properly kept in order. In selecting, therefore, a nurse to take the child at the end of the time when the monthly nurse gives it up, it is well to err on the side of mature age; and as all nurses have some peculiarities in their management which, though perhaps themselves not over good, yet will not bear a sudden change, it is advisable that the new nurse should be introduced to her charge some few days before she undertakes its entire management, so that she may see all that is done, and avoid making sudden, and therefore injurious alterations.

1789. **The Nursery** for the young infant should be apart from that given up to older children, who are too riotous for the tender limbs of the new-born child. It should be kept warm, but airy; and in winter, as well as the cold weather of spring and autumn, must have a fire night and day. As soon as the baby is weaned, and able to run about, it may be turned into the general nursery. A day and night nursery are also required, if possible; but there is no objection to an infant being *at night* in the same room with the other children, as they generally sleep pretty soundly.

(*a*) **The Aspect of the Nursery** is a point of the utmost importance, as I am confident that the health of its inmates mainly depends upon it. Light, direct from the sun, is of the greatest service to the child; and even if it is not submitted to the full rays, yet the room itself ought to be fully cleansed by them. This subject is more fully entered upon at page 82.

(*b*) **The Proper Ventilation of the Nursery** is a very difficult subject, for children are very liable to the injurious influence of cold draughts of air, and yet require plenty of it in a pure and uncontaminated condition. The only way to effect this is to give space enough to contain such a bulk of atmospheric air as will last, with slight additions, from the time of going to bed until the morning. It is common enough to crowd four or five children and one, or even two, nurses into a room fourteen or fifteen feet long by twelve or thirteen wide, and eight or nine feet high. Taking the larger of these dimensions, the cubic contents would be 1755 feet, which divided by 5 (the number of sleepers), will give 357 cubic feet for each, or as near as may be half a cubic foot per head per minute for the twelve hours of night. In the minute the half-grown child breathes, on the average, twenty times, inhaling about fifteen cubic inches at each inspiration, or about 300 cubic inches per minute; and as there are 1728 inches in each foot, it follows that as this sized room affords half that quantity to each person, or 864 inches per minute (instead of 300, the number of cubical inches shown to be necessary), it allows nearly three times as much air as is required during the twelve hours of sleep, supposing that the air expired were kept separate from that which is yet uncontaminated; but as is well known to all those who are conversant with the subject, gases have a tendency to mix when in contact, and hence the whole air of the rooms becomes partially vitiated before the morning. The carbonic acid expired is heavier than atmospheric air, and by many is supposed to lie upon the floor, so that it is considered better to raise the bed from that position, though the assumption is not supported by any reliable facts. The above-mentioned tendency in carbonic acid gas to diffuse itself, is opposed to this doctrine, as is also the fact that rooms in which gas is burnt to a great extent, so as to give off large volumes of carbonic acid gas, are much more unbearable close to the ceiling than near the ground. For these reasons, therefore, I conceive that on this account the prejudice against low bedsteads is not well founded, and very properly it is becoming daily less common. The only valid objection to very low bedsteads is, that the draughts from doors and chimneys are much more prevalent there; and, while the construction continues as at present, it is desirable to raise the child's bed to a dozen inches, at least, from the ground. With regard to the proper amount of air required for the respiration of children during the night, I am inclined to believe that less than 1000 cubic feet is not enough to ensure proper ventilation; and even with this volume should be joined a constant but gradual supply, furnished by such means as will prevent draughts, and allowing also for a corresponding escape. When a fire is used there is no provision equal to the stove of Dr. Arnott (see *fig.* 54), in which the whole apparatus there shown is admirably adapted for the nursery. This is more fully described at page 117; and I see no possible objection to its use in every room in which children require a fire, since the absence of flame is there a valuable boon, and would prevent many of those accidents from playing with fire which are now so very common. The first expense may be an objection to some, but the saving in coals will soon balance the outlay, and in all other respects the superiority is so marked as to ensure its universal adoption. In both nurseries the windows should be thrown widely open for at least an hour, those of the day nursery before the children enter it, and those of the sleeping-room after they leave it. In suitable weather this period will of course be extended very considerably.

(*c*) THE TEMPERATURE of the day nursery in winter should not be lower than 55 degrees, nor should it reach much above 60 degrees, or in very cold weather a little higher. That of the sleeping apartment need not be quite so high, but it is well to avoid all sudden transitions, and especially when children are apt, as is generally the case with them, to kick their clothes off them in bed.

(*d*) IN THE SUMMER TIME a nursery floor is much more wholesome without any carpet; but in the winter, unless kept warmer than is desirable, the bare boards are rather cold to the feet. It is, however, a point upon which I should not express any decided opinion, as I do not believe it is of any great importance.

1790. THE FURNITURE AND THE UTENSILS required in the nursery should be of the plainest description. Strong tables and chairs, the latter of various sizes, suitable to children, are chiefly what are wanted, together with cupboards, &c., for holding clothing and toys. Nothing is so injurious to young children as the constant necessity for restraining their tendency to injure furniture, which proceeds from a laudable feeling of curiosity, and yet must be checked if indulged in to any great extent; but if the furniture is strong and plain, the utmost efforts of the child will not avail against it, and it may safely be left to take its chance. In the night nursery, iron-bedsteads are now universally taking the place of wooden ones, being less bulky, and more free from danger of vermin. Mattresses of wool or hair are also displacing feathers, which are now rarely met with in this region. For very young children, I think wool warmer than hair, and therefore more fitted to their low powers of generating heat; but afterwards the one is quite as good as the other, though I am not aware of any particular in which hair has the advantage, excepting in the summer, when it is certainly cooler. With regard to clothing, it is only necessary to say, that calico is the best material for sheets; and that, besides the warmth from the blankets, there should be no dependence upon the quilt, which should be light, and only added for the sake of appearance, and facility in washing.

1791. THE WASHING AND BATHING APPARATUS varies, of course, with the age; the only rule being that the vessel, or bath, should be large enough to contain the whole body of the child, let the age be what it may above two or three months, and up to that time a large basin will avail for that purpose, if desired. An ordinary oval foot-bath serves for the infant up to about eighteen months, but afterwards a larger bath must be procured. (See the list of baths hereafter given).

1792. SMALL SAUCEPANS, a tea-kettle, together with plain breakfast and dinner services, will be required, depending, of course, upon the age and number of the children, and which, consequently, it is impossible to specify here. With these, also, must be provided other articles of crockery, which it is unnecessary here to dilate upon, but of which every mother and nurse is aware.

1793. The Artificial Lighting of the nursery should be such as to avoid risk of fire, and for this purpose, where it is available, there is nothing like gas, both by night and by day. It may be easily placed out of the reach of the child, and may be so situated as to allow of the entire escape of its noxious products of combustion. This is best effected by fixing the gas-burner just below an Arnott's valve, which will be made to act all the better from the heat given off, and the gas will thus assist the ventilation of the room, instead of the reverse. Next to gas, oil burnt in the common lamp is the best, as there is less danger of upsetting it injuriously than in the case of candles or more complicated lamps.

Sect. 2.—Management of the Child from the End of the Month to its Weaning-time.

1794. The Washing and Dressing of the infant is the same as that described at page 566 until it is some five or six months old, when the water may gradually be reduced in temperature, and it is no longer necessary to dry each part separately. Cold water is adopted at the end of the second or third month by some managers; but in opposition to most medical authorities, and certainly inconsistently with my own experience. It is true that children survive its use, and no one maintains that it inevitably kills; but the question is, which plan is the better calculated to ensure a healthy frame? and here I believe the answer will be in the long run in favour of tepid water. In all cases, however, before weaning some little modification is required from the process described as necessary for the young and new-born infant. There is, no doubt, a great difference of opinion as to the time of beginning to use *cold* water for babies; and I believe it must vary, or at least ought to do so, according to the constitution of the child, as inherited from its parents. The same rule applies here as to bathing generally, which has been dilated upon at par. 1721. If reaction occurs, cold-bathing does good; but in some infants it cannot be produced, and the child remains cold after being dipped, until warmed before the fire. To such a constitution cold-bathing, I am satisfied, is unfitted, and often produces congestion or inflammation of the lungs. It is very common to see children who are regularly bathed in cold water with a fixed and mottled colour in their cheeks; but this is not a sign of health, but rather of a congestive tendency, and many such children are rarely long free from some complaint of that kind. Whenever the child turns blue and *remains* so, it may be considered that cold water is disadvantageous; and, on the other hand, if the skin rapidly becomes red and warm, the contact of cold water is not only not injurious, but is actually attended with an increase of health and spirits. There are, however, different degrees of cold, and much depends upon the source from which the water is obtained. Cold water for children should never be lower in temperature than 45 or 50 degrees, and to obtain this in the winter a proportion of hot water must generally be added, unless it is drawn from a very deep well, and used almost immediately. With regard to the use of soap, no difference need be observed.

1795. The Feeding of the Infant for some time is not changed from the mode described at par. 1777; but as the child increases in strength, the quantity and quality are increased and raised, while the periods between the meals are lengthened. Milk of some kind is, until the teeth appear, the staple of the food; and it is, no doubt, the best article we possess for the purpose. Ignorant people fancy that it disagrees, because it always is turned into a curd; and I have frequently known the attempt made to rear a child upon water arrowroot with sugar only, but with a result which convinced the nurse that this kind of diet could not even keep the child alive. Bread or flour boiled in water, or biscuit-powder boiled in a similar way, till quite tender, or rusks, or tops and bottoms, all of which are prepared from wheat-flour, will suffice without milk in some cases, when the child is very strong; but though they keep the child alive, they do not afford that healthy tone which the natural food alone gives. They are deficient in saline matter, and should never be allowed for any length of time without a little milk, or, what is better, cream and water, added to them. Much depends upon the condition of the child's bowels, which may be very costive, and then will bear oatmeal; or very relaxed, in which state the arrowroot, rice, or boiled flour must be exhibited. But until the infant is a month old, it will seldom be desirable or necessary to go beyond cow's milk and water with sugar, though many strong children seem to do better, even before this age, with a slight addition of one or other of the above-mentioned ingredients. Gradually the quantity of thickening material may be increased; but it is better to err on the side of caution, and protract the change a little longer, rather than begin to give the child more stimulating food than its stomach will bear. The milk may also be used in large proportion, especially in London, where, at the best, it is but milk and water; but in the country also many children, after the second or third month, will bear food made of genuine milk, thickened with one or other of the articles suited to the case. Bullock's semola is the gluten of wheat-flower deprived of its starch; but I cannot, in theory, see the use of this material, nor, in practice, have I found it answer. If it is to be mixed with milk, it is unnecessary, because milk already by nature is full of nitrogen, and if it is not to be used with milk, it must be mixed with starch in some form, in which case it is only reunited to that which has been taken from it by an expensive process. Baked wheat-flour is this gluten with the addition of starch, so that it embodies all that is wanted, and is, I believe, the most scientific as well as the most practically useful of all food for infants, always excepting milk. But because it is cheap, it is neglected; and the very same article, under the name of Farinaceous Food (Hard's, or any other person's) is purchased at four or five times the price; and though none the better, yet fancy clothes it with some wonderful advantages. It is well known that all these foods are really wheat-flour, and in most cases nothing else, and yet people will be gulled into giving an absurd price for them, rejecting all the time a good article because it is offered to them in its own natural form and *name*, and at a proper market price. When there is a great tendency to form fat, I believe Bullock's semola may be advantageously used; but these cases are very rare indeed, and are scarcely worth consideration; nor would Mr. Bullock manufacture the article if he were dependent solely upon this state for a sale. Sometimes, in very delicate children, a little isinglass may be dissolved and added to the food with advantage; but, generally speaking, the milk of the cow with the addition in some cases of *small* quantities of one or other of the above named materials, is quite sufficiently supporting up to the sixth month, after which the management will require a slight alteration, and will be continued in the next section. It may be remarked, that from the second to the sixth month the periods of feeding, whether by suckling or from the bottle, should be gradually lengthened, so that by the last-named time a meal every four hours will suffice. As the times of feeding diminish in frequency, while the whole amount of food required daily is increased, so the quantity given at a meal must be gradually augmented, and by the sixth month the child will often take nearly a bottleful of food. Indeed, in some cases, I have known a good-sized bottle taken every four hours before the sixth month, but this is certainly above the average.

1796. SHORT-COATING is of course necessary at some age, but the exact time at which it is carried out must depend upon the season of the year, and in some measure upon the health of the child. Thus, supposing it to be born in the autumn, it will not in any case be right to put it into short clothes until the spring; while if born at the opposite period of the year, and it is strong and healthy, it may be right to make the change in the warm weather of July or August, although the child is only perhaps three months old at that time; but from the heat of the weather, the long-clothes are oppressive to both the child and its nurse, and may very advantageously be dispensed with.

1797. THE FOLLOWING LIST comprises the usual articles necessary for this change, with their cost.

ARTICLES NECESSARY FOR SHORT-COATING.

		MADE AT HOME.			READY MADE.		
		s. d.		s. d.	s. d.		s. d.
Eight frocks, ...	ea.	3 0	to	20 0	4 0	to	40 0
Four petticoats	„	3 8	to	5 0	2 6	to	8 0
Three flannel do.	„	1 6	to	8 0	3 0	to	6 0
Six shirts... ...	„	0 6	to	3 6	0 10	to	6 0
Six night-gowns	„	1 3	to	2 6	2 6	to	6 6
Six pinafores ...	„	0 6	to	1 6	1 0	to	4 0
Six pairs of socks	„	0 6	to	2 0	0 6	to	2 0
One pair of shoes	„	1 3	to	3 0	1 8	to	3 0
Four pelisses ...	„	3 0	to	0 0	4 6	to	40 0
		15 2		40 6	20 1		115 6

These will all much depend upon the materials used for frocks. 1¼ yard of fine Naintzuk muslin, at 2s. per yard, with a full body, and a little Valenciennes lace round the body and sleeves, made up at home, will cost about 3s. 6d., and look very pretty; for nothing is better or prettier for young children than a tucked dress, well washed, starched, and ironed. Again, a piece of deep-worked cambric muslin, costing from 12s. to 30s. the length, with body and sleeves to correspond, will, of course, look very well, but will be equally expensive, or more so, in proportion. Print dresses are not quite so pretty, but keep clean longer; and here, again, a saving may be made by letting the child wear its dirty frock in the morning, and putting on a clean one when it is dressed in the afternoon. Pelisses are made of merino, trimmed with flounces, in the winter; and Indian twill and any checked muslin, or print, in the summer. These may be braided and trimmed [illegible] :Y.

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and autumn, it is scarcely possible to over-do the child in this respect, that is, so long as it is protected from over-fatigue by some kind of carriage. The influence of light and sun on the colour of the skin is very remarkable, and appears to be closely connected with a state of rude health. The term, "sunburnt," is that popularly used to express the condition following exposure to the sun, in which there is a brown deposit under the cuticle, together with, in general, a greater amount of blood circulating in the skin. What the nature of the change is which produces this colour has not been established, but it appears to be connected with certain rays of the sun which are neither luminous nor heat-producing. But setting theory aside, experiment has shown that light exercises a marked influence in the development of animals—the tadpole does not become the frog if kept in the dark, nor does the insect go through its several stages. It is very rare to see a deformed gipsy or American savage, although they are exposed to all the variations of the seasons; while, on the other hand, in the cellars of Liverpool and Manchester hundreds of cases of deformity may be met with in their most hideous aspects. Hence in all cases plenty of fresh air and light, with a proportion of exercise suited to the age, should be provided for the young child.

1801. THE PERAMBULATOR is one of the most extraordinary inventions of the day, and chiefly from its extreme simplicity. Any one who has attempted to draw the old-fashioned child's carriage will have felt its weight and the disagreeable nature of the duty; and yet, until within the last three or four years, although very nearly the same principle had been adopted for Bath chairs during more than half a century, no one thought of extending it to that for the child. They are now made so extensively, and at so low a rate, that they may be procured in every village; but they are not always manufactured in the best possible way. It is necessary that both the hind wheels and that in front should be attached by springs, or the jolting on rough roads will be too great for young children. If these springs are badly attached, they are constantly breaking; but by a slight improvement on the common construction this is readily avoided. It consists in attaching the hind axle to the body by a leather strap, so as to prevent the strain upon the spring which the opposition of a large stone affords. *Fig.* 144 shows this adaptation to the cheapest kind of spring which is used. Between the Bath chair and the perambulator there is one slight difference, inasmuch as in the former the front wheel is moved on a spindle by the handle, which thus guides the chair, but in the latter this motion is effected by depressing the handle, and thus taking the weight off the fore wheel, at which moment the hind wheels are moved right or left by twisting the handle in the desired direction. Herein lies the simplicity, for whereas the Bath chair is expensive in its make, and requires the person riding in it to guide it, the perambulator is cheap in construction, and is guided by the nurse who pushes behind. Many nurses are too apt to turn the chair without depressing the handle, which soon wears out the front wheel, and should therefore be guarded against; but a very slight pressure at the end of the lever is sufficient to raise the front wheel from the ground. When made to hold four, this cannot so well be managed, and for this reason there is an objection to this mode of construction. For one or two children, however, they are invaluable aids to the nurse or mother; and on ground which is nearly level they may be pushed for miles without any increase of fatigue over that occasioned by the walk itself. Babies from the age of four or five months can be taken out in them, but they do not sit up well in it until six or seven months old. The chief advantage derived from them consists in the power of giving air and exercise without the impression of the nursemaid's arms, and also in the greater length of time which they permit to be devoted to the purpose, from the fatigue of carrying in the arms being wholly got rid of.

1802. TEACHING TO WALK is practised, in many cases, far too early, as a consequence of which children often become more bow-legged, or knock-kneed, or weak at the ankle, than they otherwise would be. The injury to the back does not seem to be produced in this way; because, whether they sit or stand, this part is equally strained. A timid child naturally strong in body, may require some little encouragement before it will go at all; and in some cases I have known strong hearty children to be three years old before they would try their unassisted powers, and then only from the stimulus afforded by the example of a younger baby. No positive rule, therefore, can be laid down against the various devices for the nurserymaid, or mamma, to hasten that era in childhood, "the going alone;" it is in most cases better to retard it than the reverse, for there are more instances of mal-formation owing to the weight being thrown on the limbs too early, than of mischief from want of using them, which can only be constitutional after all. The old-fashioned go-cart is quite out of date; but why, I know not, as it is far better than many of the substitutes for it, and is a very safe means of aiding the child in supporting itself. It is merely a circular light framework, supported on legs and castors, and raised to the level of the child's waist, so that being placed in the middle, a fall cannot take place. At present, children are encouraged to wander about from chair to chair, with a chance of a severe fall backwards; and the only advantage of the plan is, that no child will keep it up after being tired, which it may be compelled to do in the go-cart. This last machine may therefore be abused; but if only used for an hour at a time, it is a very acceptable addition to the nursery appliances. Many mothers keep their children on the floor until they get up of themselves; and the plan often answers well, but not always. Some children cannot be persuaded to crawl on all-fours, so that no exercise at all is taken unless they are encouraged by the hands under the arms. Altogether it may be said, that the matter *must* be left to the discretion of the mother, or her more experienced adviser, since so much depends upon the ever-varying circumstances of each case. If, however, there is the slightest tendency to distortion or weakness of the joints, the greatest prudence should be exercised in allowing any weight to be thrown on them before the child itself makes the attempt. The average time for beginning to walk alone is about the tenth to the twelfth month, but, like talking, with which this often corresponds in point of time, there is a great uncertainty in it.

1808. THE FOLLOWING ARTICLES OF FOOD are suited to babies from the age of three months to the end of the second year:—

(*a*) OATMEAL GRUEL is made either with prepared groats (Robinson's are the best) or with the old-fashioned Embden groats, or with English fine oatmeal, or with Scotch meal. For young infants the prepared groats are the best, as they are ground very fine; and I fancy they are mixed with wheat-flour, which renders them less inclined to gripe and purge. The directions for making the gruel with them are to mix up a tea-spoonful of the meal with a little cold water, and then stir boiling water into this, after which it requires boiling for a quarter of an hour, and should then be strained, if lumpy, and mixed with an equal quantity of milk. Embden groats must be boiled slowly for two or three hours at least, in order to get out all their nutritive matter. The English or Scotch oatmeal is used like Robinson's groats, but the latter being coarsely ground requires a longer boiling, after which it makes an admirable article of diet.

(*b*) RAW OR BAKED WHEAT-FLOUR, or any of the farinaceous foods sold as Hard's, &c., should be mixed up smoothly with cold water, and then after having boiling water poured upon them, they require about ten minutes' simmering, upon which they thicken and require reduction with milk.

(*c*) BISCUIT POWDER, TOPS AND BOTTOMS, AND RUSKS.—Boil either in water for a quarter of an hour, which must be strained off after letting it settle, then rub it through a sieve, and add some good milk to the pap before using it. For a small panakin, a tea-spoonful of powder will be sufficient.

(*d*) ARROWROOT.—Mix a small tea-spoonful of arrowroot with cold water, as for starch; pour on this boiling water, stirring all the time, and if it does not thicken, put it on the fire for a few seconds until it does. Make it thin and cool by adding cold milk. If the infant is weaned, the arrowroot may be made entirely with milk. This food will not suit every infant, being in some cases too constipating.

(*e*) PEARL SAGO AND SEMOLINA boiled well in milk make a very light and nutritious food for infants.

(*f*) BARLEY GRUEL, of pearl-barley, mixed with milk suits some children; or made with the prepared barley sold as Robinson's. But for most children barley in any shape is too heating.

(*g*) A GOOD SUBSTITUTE FOR THE MOTHER'S MILK in delicate children is made by mixing one-third of cow's milk with two-thirds of mutton broth; or beef tea made according to the following directions; and sweetening it with white sugar.

(*h*) BEEF TEA OR MUTTON BROTH for an infant is made without spice, and with very little salt. Let a quarter of a pound of lean beef or mutton, as the case may be, be cut into small pieces; put it into a basin, and pour over it half a pint of warm (not boiling) water; cover the basin, and let it stand for half an hour near the fire; then put the contents of the basin into a clean saucepan, and set it on the fire to boil. When it boils, skim it well, and cover the saucepan; draw it off the fire, but let it simmer gently for an hour. Strain through a tammy sieve into a basin, and put it into a cool place till wanted for use. In cool weather it will keep a day or two, but in hot it must be made every day.

(*i*) RICE GRUEL (*useful in cases of relaxed bowels*).—Wash and boil a quarter of a pound of rice in a quart of water for three or four hours. Strain the gruel away from the rice, and put it in a cool place. When wanted for use, take half a panakin of it, and warm it with an equal quantity of milk. Add a little sugar.

(*j*) THE SUGAR for the above receipts

should be white when the bowels are not confined, and brown when at all inclined that way. When very constipated, treacle may be had recourse to.

(*k*) **Bread and Milk** rarely agrees with babies until they are fifteen or twenty months old, and have been weaned some time. The bread should be stale, and of a fine but pure quality. It should be broken or cut in small pieces, and then boiled in water for ten minutes, after which good new milk may be poured upon it in an equal quantity, and then the whole just boiled up. If the milk is poor, the water should be poured off before adding it.

(*l*) **Good Gelatine** or isinglass may be added to any of the above diets, excepting, of course, beef tea or mutton broth, which do not require it. Hartshorn shavings were formerly used for the purpose, but they are only serviceable from the gelatine they contain, and are therefore now superseded by the finer qualities of gelatine as sold in the shops.

(*m*) **Cup or Bread Pudding.**—Grate some stale bread into a teacup, pour boiling milk over it, and when cold mix with it the yolk of an egg. Boil it in the cup for a quarter of an hour. This is an excellent baby's pudding.

(*n*) **Another Baby's Pudding.**—Take a teaspoonful of flour, and mix it very smooth with a teacupful of new milk. Beat the yolk of an egg, and mix it thoroughly with the above. Put it into a teacup, and tie it up in a pudding cloth, and boil it a quarter of an hour, if the fire be very brisk; otherwise, twenty minutes.

(*o*) **Rice Pudding.**—Rice steeped in milk for several hours, in the proportion of a dessert-spoonful to half a pint of milk, and then boiled, is a palatable and nutritious pudding for children from ten months to two years old.

(*p*) **Arrowroot Pudding** is made by mixing the arrowroot with cold milk and adding the yolk of an egg. It should be boiled a quarter of an hour.

(*q*) **Stewed Meat for Weak Stomachs.** When it is an object to give young children meat, and yet they do not digest it, proceed to cook it by stewing one pound each of beef and mutton cut in slices across the grain of the meat, with one carrot, one turnip, and one small onion for eight hours in three quarts of water, and season with salt and a very little pepper or pimento. Then take out what is left of the vegetables and give about half a teacupful of the meat with the gravy, which together form rather a thick mess. From the long boiling of the meat, and its being cut across the grain, it is divided completely, and is free from long fibres, so that the weakest stomach digests it, if it will bear animal food in any form.

Sect. 3.—Management after Weaning.

1804. **General Observations.**—In the present section we have to consider the child in its several stages, as it advances from the "toddling infant" to boyhood or girlhood. As it grows in body, the mind is also unceasingly occupied in taking in impressions, and comparing them with each other. Everything it sees is a source of wonder and of admiration, or dislike, both of which are vividly expressed at this age, and apparently without any just cause. Thus, a fragment of brick, or some other piece of rubbish, which is to us quite valueless, will often occasion more pleasure to the child than the most costly toy; while no expense or trouble will always ensure a grateful appreciation of the efforts which have been made to produce a smile of welcome. There is a remarkable capability of happiness at this age, and also a complete dependence for its enjoyment upon some one or two persons, who have the confidence of the child, and who are considered omnipotent by him. Now is the time when impressions for good or evil are made, never to be wholly effaced; and, hence, the utmost care should be taken that harm is not done, and that what evil passions may be in excess should be diligently curbed and counteracted by judicious training. It is absurd to say that all are born alike, or that in childhood boys and girls are the same, and are only altered in character by external circumstances. The brain itself is larger at birth in the boy than in the girl; while the whole body of the former averages 7.05 lb., and that of the latter 6.41 lb. This material difference is accompanied by a corresponding variation in habits and feelings. The boy almost invariably prefers a sword, a stick, a drum, or a trumpet, while the girl chooses a doll, or some substitute for it in the shape of a ribbon, or a handkerchief. The mother, or nurse, who has a whole little family to manage, always complains of "the boys," and finds little difficulty in exercising a due influence on her female children, who are sharper, quicker in imitation, more gentle and submissive, than the brothers, and require altogether a different style of management. Besides these distinguishing marks peculiar to the sexes, there is also an immense congenital variety in the natural individual characters of the members of each sex. Take a large family of children born in succeeding years, and equally healthy, managed by the same mother and nurse, and in every way submitted to the same external circumstances;

yet how various the tempers and dispositions, and how necessarily varied also their successful management must be. Much may, no doubt, be done to subdue evil tendencies, and call forth those which are good; but every one who has watched the development of the mind of the child must see that it is not a blank sheet of paper which receives all its ideas from without, and each of them exactly in the same way. In one child, the sight of a fly on the window-pane excites a desire to destroy or injure it; while in another, the wish is to cherish, pet, and preserve it from harm. All children have a propensity to destroy their toys, but not in an equal degree, nor from the same motive, which is sometimes the prompting of an inquisitive mind, and in others the mere love of destruction, to which the Phrenologists apply the name Destructiveness. From a full persuasion of the truth of these assertions, I am convinced that the theoretical groundwork of Phrenology is correct, and that the faculties grouped together by them are called forth with various degrees of power in the youngest child; but when it is attempted to connect these principles with the external form of the brain, the science is converted into charlatanism, and for this reason has failed in long keeping possession of the public mind. If true, it would be of the greatest service in education; not because it would permit of the external compression, or other treatment, of the organs in excess, but because it would enable the nurse, or teacher, to know that beforehand which she now only learns by experience, and at a time when considerable mischief may have been done from a mistake in the discrimination of character. With these remarks on the nature of the machine which is to be treated, it is now necessary to proceed to its superintendence.

1805. THE WASHING AND DRESSING, from the end of the second year to the time of going to school, varies very little in its nature. It must still be carried out by the nurse, who will use her discretion, if she has no other orders, as to the use of warm or cold water in winter. During the summer, all children at this age bear cold water, and plenty of it; but in winter, the remarks already made at page 572 apply with great force at this age.

1806. THE CLOTHING is not made very different in principle from that introduced after short-coating, except in the article drawers, which boys, and girls too, now begin to require. From the shortness of the frocks and petticoats, which are used for both sexes, the lower limbs are constantly exposed to the cold air in the house as well as out, and for this reason drawers are indispensably necessary to the comfort and health of the children. They may be made very short, and in the girl are ornamented to the heart's content of the mamma; but this can do no harm, and may be indulged in without injury to health. When children take out-of-door exercise, it is now customary to enclose their legs in warm woollen gaiters, reaching from the knee, or even higher, to the foot; and this plan has been the means of saving thousands from disease and death. Many a child has been killed in "hardening" it, and many a one will yet suffer from that fatal mistake. The scientific farmer finds out by experience, that, if his young stock are to be of good form and healthy constitution, they must be kept warm and dry; and, therefore, he spares no expense in protecting them from the keen winter air and the rains of heaven. But the cleverer mamma, especially if she fancies that she has a little knowledge of the subject, exposes her children, in order to render them hardy, forgetting, or not having discovered, that the very exposure nips the frame, and prevents its being developed into a condition which can resist external influences. Some children are never allowed to warm themselves, and are cold from Michaelmas to Lady-day, or there-abouts—the consequence being that the chest is narrow, the abdomen large, the hands and legs blue and covered with chaps and chilblains, and the face mottled blue, red, and yellow. The blue colour is from the congestion in the veins caused by the cold, the red from the inflammation established to get rid of this, and the yellow from the defective action of the liver caused by this chilling of the surface. By all means give children as much air and exercise as they can take, in all weathers but actual rain or snow; but when at rest, let them be like the farmer's young stock, in a comfortable and *warm* apartment. Ventilate this well, but in the ventilation take care that the temperature is not so reduced as to chill the tender skin of the child; and in proportion to the warmth of the room let the clothing indoors be regulated. Whatever the means may be, avoid a cold skin, which in childhood is the harbinger of all sorts of mischief. The simple remedy is a good fire, joined to Arnott's ventilator, &c., as already described at page 116; but if these costly luxuries cannot be afforded, then the cheap substitute of warm, long, woollen-mittens and worsted-stockings may be introduced, with the knowledge that they are not by any means inefficient. Here, as in every other department, there is every variety in the power of generating heat, and the clothing or temperature which will suit one child will be too hot or too cold for another, so that no single rule can be applied to all; excepting the simple one mentioned above, and easily carried out by the nurse or mother occasionally feeling the skin of the legs and arms of her charge; when, if they are too cold or too hot, some change ought to be made, if justice is to be done to the natural health of the individual.

1807. **The Food Suited to the Inhabitants of the Nursery** will vary now considerably from that adapted for the infant; and is, in fact, a sort of modification of that which the adult enjoys. A regular breakfast, dinner, and tea must be established; and to the young children a slight break must sometimes be given at other times, but only in the shape of a bit of bread and butter, after morning and afternoon exercise, when the children would often be too hungry to sleep, if left without food until dinner. The hours for these meals may be—for breakfast, 8 o'clock in summer, and 9 in winter; dinner, 1 or 1.30; and tea, 5 or 6; which meal will last until bed-time, at 7.30, or 8 p.m. These meals suffice for all strong children more than five years of age; but, prior to that period of life, the stomach will hardly last so long as five hours from meal to meal; and, indeed, in some delicate children at a later age the time is too long to fast. The same principles of nutrition apply at this age as are described at page 452; and the kinds of food suited to the child are also the same as are fitted to the human being generally, which are fully described under Chap. I, Book VII. It will, therefore, suffice to enumerate the best dishes suited to each meal which is taken in the nursery.

1808. **For Breakfast and Tea** there is nothing equal to bread and milk (see par. 1803), or oatmeal porridge (par. 1694), or rice milk (par. 1803), or bread and butter, with milk and water, or with *very* weak black tea. It is a great mistake to suppose that butter is unwholesome for the child; the fact is, that dry bread, or "bread and scrape," is far more so, from being deficient in the heat-producing element supplied by the butter. When children are allowed plenty of air and exercise, and are not made dyspeptic by confinement, the use of butter in moderation is attended with the most beneficial effect. Preserves, or honey, answer the same purpose; and, for children who are not liable to diarrhœa, they are very well suited. Some weakly children require a more liberal diet, and will be the better even at this meal for a wine-glass of sound home-brewed malt-liquor, instead of the above liquids, together with an egg or a piece of meat, either cold or plainly minced; and, though these are the exceptions, yet they are by no means rare. I have succeeded in this way in restoring health to the most delicate children, who have afterwards grown up the strongest of the family, and have, in spite of their early introduction to fermented liquors, been able to dispense with them wholly in after-life. I do not, I confess, like the indiscriminate use of these for children, but, at the same time, I am assured that in the above cases they are of the very highest value.

1809. **For Dinner**, the diet should consist partly of plain meats, fish, poultry, or game, and partly of vegetables and puddings, which may be made of fresh fruit in the proper season, and occasionally of preserved fruits at other times. Variety is essential to the child, and though I am not sure that the plan is a good one of giving part of each of the above kinds of food at one meal, however universal it may be, yet I am confident that, if not together, they ought to be allowed on alternate days. I believe that children will eat quite enough of one dish at one time to do them good, and if restrained to this would seldom over-eat themselves. But just as the older *gourmand* distends his stomach by partaking of every dish handed to him, so the child will eat a quantity of pudding after he has satiated himself with meat, or *vice versâ*, as is the case in some establishments. Under the existing plan it is necessary to place a bridle on the child and to limit his allowance, and though this might still be necessary, yet it would not be so to the same extent. I would, therefore, strongly advise a good meal of animal food and vegetables, on alternate days, with substantial puddings intervening. Thus, suppose a dinner of roast mutton and potatoes, with cauliflowers, on Monday; then on Tuesday a gooseberry pudding might be given, with a liberal allowance of bread to eat with it, and made with a substantial, but light suet crust. It is astonishing what a quantity is now put into a child's stomach, when the bread, and the meat, and vegetables, followed by the solid pudding, are all taken into consideration. It is no wonder that they are often heavy and indisposed, and demand on the next morning a visit to the medicine-chest to get rid of the superfluous food, which has already kicked up a disturbance. I do not say, that all children can thrive upon a diet composed only of meat on alternate days, but I am persuaded that the majority of healthy children would be the better for it. If, on the other hand, animal food is found to be necessary, it should either be limited in quantity to a half meal, or it should be taken without its attendant pudding. The plan of allowing children to fill themselves with pudding, and then have what meat they can eat, is still worse, because from experience it is found, that though in this way the cost is less, yet more bulk of food is swallowed, and the stomach suffers accordingly. The cost is less, because one pound of pudding and a quarter of a pound of meat cost less than three-quarters of a pound of meat and half a pound of pudding, which would be something like the proportions in which the two would be taken; though they are more altogether than most children would swallow, even if unchecked. Beef and mutton, and lamb, roasted, and eaten hot or cold, or hashed, or minced with little or no spice, and with a slight flavouring only of onion and ketchup or vinegar, and mutton chops or beefsteaks, are the staple animal food. Veal may be indulged in as an occasional change, and especially when stewed with rice in a plain way, with a very little spice. Pork is not very wholesome, and is only adapted for very strong children who can digest almost anything. Salt meats are rather too hard for the stomachs of children, and they have also lost the most valuable ingredient for supplying the wants of the child in the saline matters which have escaped in the process of salting. Good ham and bacon are, however, not to be rejected as unfit for the nursery, though only useful as adjuncts to vegetable meals, or to veal or chicken. Potatoes, cauliflowers, brocoli, and cabbage treated according to Miss Leslie's receipt at page 488, are all suited to the child's wants; as also are French beans, peas, and broad-beans, in moderate quantities. Spring spinach, turnip-tops, and nettles are valuable, because they can be obtained at a time when there is little else of a digestible character, in the shape of green vegetables, and when winter has stopped the supply for so long a time as to make them doubly useful. With regard to puddings, the following may be used with advantage, omitting, in some cases, the eggs, or a part of them, viz.:—The puddings given at par. 1668—(*f*), (*g*), (*h*), and (*i*); also, those at par. 1669—(*a*), (*c*), (*d*), (*f*), (*g*), (*h*), (*i*), (*j*), (*k*), and (*l*), without the crust; also, (*m*), (*o*), (*q*), (*r*), and (*s*).

1810. **The Beverage** suited to the dinner is spring water, or toast and water made by simply pouring cold water upon a toasted piece of bread. In weakly children, small home-brewed beer may be allowed, but not for strong healthy children of this age; about a quarter of a pint is all that should be allowed on the average, for beyond this drinking only increases the appetite for solid food, and as the great difficulty in hearty children is to satisfy this without clogging the stomach, so the limitation of the fluid prevents over-distention in two ways—first, by the actual diminution in volume equal to the quantity by which it is lessened; and secondly, by preventing that gluttonous yielding to the appetite which drinking enables them to indulge. When malt-liquor is allowed the quantity should rarely exceed three or four ounces.

1811. **Salt and Spices** are not equally required by the child, the former being an absolute necessary, while the latter may or may not be desirable, according to the particular constitution. Salt, in all cases, should be liberally used, as upon it depends in great measure the power of obtaining certain mineral elements required for the supply of the blood. Bay-salt is better than the almost pure chloride of sodium, which is now so largely used in this country, and obtained from the salt-springs of Cheshire and Worcestershire. The latter is admirably adapted for most domestic purposes; but for children's use pure and genuine bay-salt should, if possible, be obtained, containing all the mineral elements of sea-water, and being almost as efficacious, when regularly used, as sea-air. Unless the child is very weakly, and dyspeptic, spices are not necessary; but in that case a very little black pepper, with a slight flavouring of pimento or cloves, may be used, as may also be cinnamon for sweet dishes.

1812. **Together with the Diet** may also be mentioned the manners of the child at meals. There is no time when the temper of a badly-managed child is so completely exposed as at this period of the day; and also it may be said, that the opposite condition will show itself equally truthfully. The mother, or a very superior nurse, should always be present at these times, and by her authority compel a strict attention to the rules laid down, which should inculcate an orderly deportment, and a proper waiting for the turn of each to receive the allotted share. Young children, of course, require their meat cut up for them; but after this is done, it is better to allow them to feed themselves, as they then show the approach of satiety much more clearly than when each mouthful is offered by the nurse. Whenever children begin to play with their food, it is a sign that they have had enough, and the remainder, if any, should be removed. Greediness in eating is one extreme which should be checked as alike contrary to the dictates of good manners and good health; but a listless and careless trifling and picking at the plate is the opposite fault, which is much more readily checked by taking away all opportunity of displaying it the moment it is rendered apparent. It is now the fashion to introduce silver into the nursery, steel-forks being abolished there as well as in the adults' dining-room. But this, I believe, is a great mistake, and only adds to the already great difficulty in supplying iron enough for the wants of the system. What with enamelled and tinned saucepans, wooden spoons, and silver or plated forks, there is little iron now used in the kitchen, except the knife, which fortunately cannot be superseded by any known metal. The consequence is, that steel is obliged to be given medicinally; and this is one reason for the prevalence of that medicine as a fashionable remedy in the present day. I would, therefore, counsel the use of steel-forks in the nursery as well as steel-knives; for in this department silver-*knives* even are often introduced, partly to avoid the danger of the child cutting himself, which may be easily prevented by taking care that his steel-knife has a blunt edge. To carry this theory so far as to use iron-spoons, is perhaps riding a hobby to death; but I am not sure that it would not be a better extreme than the present crusade against this useful metal. We have iron in our blood, but neither silver nor gold, and hence we want the one metal, while the others are perfectly useless to us. Nothing, however, is so bad as the alloys of copper, sold as nickel-silver, albata-plate, &c., which are just as prejudicial as pure copper, or brass, and when used with vinegar, give off large quantities of acetate of copper, a most injurious and even poisonous salt.

1813. EXERCISE is no less important now than at the previous age, when it was described as an essential to health and growth (see page 566). As the child grows older, he is able to take more without assistance, and discards the perambulator with disdain. It is a cruelty to confine the young child for long together to any one position or task, and though infant-schools may be better than the kennel of a low neighbourhood in a large city, yet, at best, they are too often but barbarous substitutes for a more lenient superintendence. When, however, the children in them are kept constantly amused and occupied, this objection does not hold good, for no nurse can do more; but in most of them the child is confined to one position for a certain time, and punished for any infraction of the unnatural law. Children at all ages ought to be taught obedience; but for that very reason, if for no other, a task beyond their strength ought never to be set them, or they will not only injure their bodies by its excessive severity, but will also be morally the worse in consequence of their forced rebellion against the constituted authority.

1814. THE SLEEP OF THE CHILD at this age is naturally sound, and of long duration. From twelve to fourteen hours will not be too much to restore the nervous energy lost during the constant and restless activity of the other portion of the twenty-four. Until four, or even six, years of age, an interval in the middle of the day, of about two hours' duration, should be assigned for sleep, in which the brain is rested, and the soft and yielding substance between the bones of the back, as well as the general ligaments of the joints, are allowed to regain their tone. There is a prejudice against this practice among some old-fashioned people, who have been taught to depend upon high-backed chairs and back-boards for support; but those who will wish to follow nature have only to watch the foal, the lamb, or the puppy, and they will see a rest at full length taken invariably once, if not twice, in the course of the day. All young animals which rest at night, including the domestic animals among them, begin the day by feeding; they then take a good gallop until they are tired, after which they lie down at full length till the heat of the day is past, in the middle of which they just rouse themselves enough to feed again, and in the evening they take a second amount of exercise, or play, after which comes the evening meal, and then a long night's sleep. We never see any young animal *standing* on its legs long together, or sitting up in any position, for the moment it has ceased to move, it lies down and rests every voluntary muscle of its body, and every joint too. It may be, perhaps, going too far to copy this example exactly and literally, because the child at the age now under consideration is not a mere animal, but it has a mind and soul which must both be considered in the scheme of its rearing, and therefore the body must be sacrificed to some extent. But still this is not the ground of objection to the *siesta*, for no one can maintain that two hours will be missed in the middle of the day at this early age, when, indeed, the difficulty is not how to find time enough for what is to be done, but rather how to occupy beneficially the long hours from breakfast till bed-time. In every point of view I am satisfied that it is desirable to keep up this habit until the child is five years old, at least; and I would certainly, from that age till six, make every child lie down, even if

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one do what is wished; and just as the old proverb says, that "one man can take a horse to water, but a hundred cannot make him drink," so we find, that a very little will keep a child ignorant, but that it takes a great deal of trouble to *make* him learn a disagreeable lesson. As soon as he is old enough to reason with himself and his teacher, compulsory education is perhaps right; but in the early stage the plan is wholly incorrect, because reason has little or no place in his mind, and the disagreeable nature of the task, increased by the fact of its being one at all, is disliked more than the punishment hanging over him in the distance. From this cause, the task is not learned, and punishment either administered or omitted; if the former, the task is still more disliked than before, from being associated with it; and if the latter, it is not learnt next time, because the fear of punishment is done away with, from the knowledge that it will not be carried out. But independently of the proper mode of affording instruction at this early age, great judgment is required in permitting the development of ideas to the full extent of which the brain is capable in some children. It is far better in an excitable child, with a large brain, and a weakly body, to keep it back in its education, than to encourage the exercise of its memory in learning verses, or other showy childish feats of memory. A dull child may, of course, be allowed to go as far as it will, and may even be encouraged in every possible way; but many brains are now so early developed, that the contrary system is necessary, and all books and even music-lessons must be postponed, until the strength of the body is established by constant exercise and fresh air. It is the vice of the present day, to attempt to force the intellect by early cultivation, and hundreds of children are yearly made more mediocre in their minds than they otherwise would be, by overstraining the infantile faculties. In most cases, a child ought to know his letters at five, and should be able to read a little at seven; but beyond this everything else may safely be left to a future day; and many first-rate characters, endowed with the highest attainments, are formed upon a foundation laid much later than this.

BOOK X.

HORSES AND CARRIAGES.

CHAP. I.—HORSES, THEIR PURCHASE AND COST OF KEEPING.

SECT. I.—VARIETIES OF THE HORSE SUITED TO PRIVATE USE.

1819. **THE VARIETIES OF THE HORSE** suited to private use, are—1st, the *hack;* 2nd, the *gigster*, or *light harness horse;* 3rd, the *harness horse;* and 4th, the *pony.* Those known as the hunter and racehorse, and the heavy harness horses suited to public conveyances or to state carriages, will not come under review, as not being suited to the expenditure here included.

1820. **THE HACK** is selected either for his beauty and showy qualities, or for his sterling powers of carrying a rider over all sorts of ground. The former of these is generally called a "park-hack," because the rider is chiefly anxious to exhibit in the park, and cares very little how he is carried so that his horse shows well for a short distance. The "road-hack," or "roadster," by which name the latter is distinguished, is a strong, serviceable, small-sized horse, which should be able to walk, trot, and gallop in the most unexceptionable manner. His walk and trot especially should be safe and pleasant, because upon these paces the rider chiefly depends in going a journey; for though the canter is easier for the rider, it is too trying to one leg to suit the horse. In the walk the fore-foot should be well lifted, and deposited on its heel, with a clean action of the hind-leg, by which the chance of "knuckling over" is avoided. Five miles an hour is the outside pace of an ordinary good walker, and ten or twelve of a good trotter, beyond which speed the pace is forced, and only fit for those who wish to compete in any of the contests on the road, which are generally confined to the butchers' boys and their friends. The best height for hacks is from fourteen to fifteen hands. With regard to their make, little can here be said in the few words which can be devoted to the subject, further than that it ought to be light and wiry, with oblique shoulders especially, and an air of breeding about the head and neck. It is true that some horses of low breed have been known as good hacks, but these are the exceptions to the rule, and the great majority bred very low would fail in all the essentials peculiar to this horse. The **LADY'S HORSE** is merely a perfect hack, with good action, good temper, and good looks. He must be able to canter, as well as do all his other paces well, and should have a good mouth in addition to the above good qualities. When a horse has these in perfection, there need be no breaking to carry a lady, as it is quite certain that if he will carry a man quietly, he will behave himself equally well with a fairer burthen. The horse is always accustomed to the flapping of the clothing, and is never alarmed by the habit, unless particularly timid, which quality incapacitates him from other reasons for carrying a lady with safety.

1821. **THE GIGSTER, OR LIGHT HARNESS HORSE**, may also be a hack, and many are used for both purposes, with benefit both to themselves and their masters. It is a very common belief that harness-work injures a horse for the saddle, but this is a mistake, which is every year becoming more fully recognised, and especially since the abolition of the bearing-rein. I have driven horses for ten years, almost continually, riding them perhaps once or twice a month, and at the end of the time, or as long as they have been sound, they have continued to hack as well as ever. If the weight drawn is very heavy, it will no doubt affect the action, and will make the horse lean his whole body too far forward; but when it is not more than that of a gig or light dog-cart, or when the horse is driven in double-harness, drawing a phaeton or other light carriage, the effect upon him is not such as to render him at all the worse hack than he would be if entirely confined to the saddle. Nevertheless, a good gigster is not necessarily a good hack; and, on the contrary, many are bad ones. This arises from a variety of causes, such as weak fore-legs, deficient action and power in the shoulders, a want of springiness in the action, or too great an amount of this quality, together with some other causes which can scarcely here be defined. Nor is the good hack always a good harness horse, for the same reasons; but in some cases the two are combined in one, and then he is, if sound and good-tempered, a most valuable animal. With regard to the size, a hack of full height is high enough for harness, and for many purposes a horse of fourteen hands is exceedingly useful. Indeed, a small horse of about that height will, in the long run, always beat either a pony or a larger and heavier animal than himself. The perfect shoulder of the harness-horse is generally supposed to be more upright than that of the hack; but this, also, is a popular error, depending upon the fact that cart-horses require that shape in order to draw their heavy weights. The reason for this is, that the pressure on their shoulders is too slanting if they are oblique, and consequently the collar chokes them by its pressure on the wind-pipe. Besides which, they have no occasion for light and quick lifting of the fore-foot, which is especially the concomitant of the oblique shoulder. So that in them the upright make has all the advantages attending upon it, without the disadvantage of leading to a mistake and attendant fall. If, therefore, it is desired to have the two offices combined in one, the expectant master need not despair of obtaining such an animal as will serve his purpose; and if he succeeds in finding him, he may fairly expect him to continue good in both capacities, unless he uses him so much and so fast as to injure his "understandings."

1822. **The Heavy Harness Horse**, suited either to the Brougham, single-horsed, or to draw a heavy carriage, is larger and heavier than the horses before described, but not now so different in breeding as was formerly the case. Good heads and light necks are common enough; and as the roads are now as level as bowling-greens, and the weights of the carriages in use are also reduced, the horse required to draw them is not nearly so heavy and lumbering as was the case fifty years ago. Towards the end of the last century, the carriage-horses were very little lighter than our present breeds of cart-horses, and not at all more so than some, as, for instance, the Suffolk punches and Clevelands. Now, our carriage-horses are many of them almost thorough-bred, and their action is light, and at the same time effective and showy. For the single-horsed Brougham, the horse should be about fifteen hands three inches, or sixteen hands, which size is large enough (for use) to draw any carriage. The phaeton-horse used in double-harness is more of the character described in the last paragraph; and such, also, is the horse intended to draw all carriages weighing less than half a ton, or thereabouts, but beyond this weight, even for double harness, and especially if intended to draw carriages with C springs, the full-sized harness horse must be used.

1823. **The Pony** is chiefly used for boys to ride, or for the pony carriage of their mammas. It is an extremely useful animal, and will do much more work, day after day, than its more showy competitor. Most ponies are complete "jacks-of-all-trades," being employed to carry the young gentlemen and ladies of the family, and also to draw a carriage when wanted; though even in their case many people fancy that harness is injurious to their hacking properties. There is a great difference in the size and in the breed of ponies, some being scarcely eleven hands high, while others reach nearly to fourteen hands, the outside height of the galloway. About thirteen hands is the best for all purposes, and ponies well and strongly made of this height will carry and draw great weights, and go long distances if not over-paced.

Sect. 2.—Purchase of the Horse.

1824. If the intending purchaser is a good judge of the horse, any remark which I can make here will not be wanted; and if not, I am afraid that no theoretical notions will avail him, and he must in that case make up his mind to trust himself in the hands of the most honest person (who is also a judge) within his reach. There is so much trickery in horse-dealing, that without a long experience no one is safe; and unfortunately the arts practised by the professed horse-dealer are not confined to his fraternity, but extend through the length and breadth of the land. "Horses direct from the breeders" are not by any means of necessity sound, nor should I be more inclined to trust the man who rears a lot of colts every year than the man who sells a hundred. If they were all sound when they are put to work, it would only be necessary to take care in purchasing a horse that he is unbroken or unused, and then he would certainly be all right; but the reverse is the case, since it is notorious that one-half of the colts bred in Great Britain injure themselves, or become more or less unsound, before they are backed. The hard ground of summer is almost as likely to produce lameness when the colts are galloping about the fields as the most flinty macadamized road; and therefore the farmer is compelled to sell unsound horses or suffer a loss, which he cannot afford. He therefore patches them up with the aid of the veterinary surgeon, or his own powers of quackery, and sells them to the dealer, or to any person who fancies the direct mode of obtaining horses to be the most secure. The fact is that a perfectly sound horse is a very rare animal, and the purchaser must not expect to find him easily, nor need he be dissatisfied if he only gets one comparatively so. Many slight diseases are legal causes of unsoundness, and yet are not always injurious to the horse in his work, especially if existing only in a slight degree. All this, therefore,

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drinking and bad company. This state of things arises as much from the ignorance and apathy of the master, as from the vice of the servant; for if the former does not know how, or does not care, to see that his horses are properly attended to, it cannot occasion surprise if the latter fails to look after his interests better than he does himself. Many a servant would be honest, if he thought that he should be detected in his first delinquency; or if he felt sure that his care of his master's property would be approved of; but when he finds himself blamed or rewarded when he does not deserve what he gets, he, in either case, feels aggrieved, and is ready to run the chance of being detected. Every master ought to study the details of honest stable-management, and could in that case detect the failures of his servant, and find fault accordingly; or, if the result be satisfactory, he may be able to praise, which is just as likely to do good, when properly applied, as to have the opposite effect when used without due grounds.

1828. **The Coachman**, having to drive well, besides his stable duties, should be useful in both capacities, even if allowed a helper, as is the case in some families where several horses are kept. Many men engage to look after a pair of horses and a carriage, and some do the entire work to the satisfaction of their masters; but to perform this task thoroughly, and also drive, a man should be in the prime of life. When it is considered that each horse, if used, will altogether occupy a man in dressing him more than two hours daily, and that the carriage and harness will require to clean them at least three hours more, it will be apparent that a man must work hard for seven or eight hours on each day that the carriage goes out, besides attending to his own appearance, and the time spent out with the carriage. The power of driving is the most important part of the duties of the coachman, because upon it depends not only the safety of the carriage and horses, but also that of the occupiers of the vehicle. If, therefore, the coachman is ever so good a groom and drives badly, it will be always a source of annoyance and discomfort to those in his carriage to feel themselves in danger. The coachman should also be able to manage the ordinary slight ailments of the horse, which many of them pretend to do without any real foundation; but without some little knowledge of this kind, the horses will be perpetually lame or sick. With regard to the manners and habits of the coachman every master will of course please himself.

1829. **The Groom** should be as capable of managing horses as the coachman, but he need not always be a first-rate "whip," as it is generally only in the absence of his master that he is employed in that way. He also should be in the prime of life, as he usually undertakes three horses, if used with the saddle only, or two horses and a gig, and very often a pony or two are thrown in. These will occupy him about eight hours a day hard work, and few men are capable, or willing, to do more than this; nor is it right that they should, as the human frame will not bear a greater amount of labour, accompanied with sweating, without injury.

1830. **The Occasional Groom**, that is, the man or boy who attends to a horse or pony, will, of course, do his best to emulate the coachman or groom.

1831. **The Wages of the Coachman** are from 15s. to 25s. per week, according to the locality, London wages being, very properly, considerably higher than those given in the country. The groom has from 12s. to 18s., also according to the locality; and those of the occasional servant can scarcely be fixed, as they vary according to the nature of his other duties and his knowledge of them.

SECT. 4.—STABLE MANAGEMENT.

1832. Under this term is comprehended—1st, *the grooming of the horse;* and 2nd, *the feeding.*

1833. **The Utensils for the Stable** are—1st, *a bucket or two;* 2nd, *the pike*, 3rd, *a besom;* 4th, *the currycomb and brush;* 5th, *the mane-comb and picker;* 6th, *the exercise bridle and saddle;* and 7th, *the horse-clothing.* The cost of which is as follows:—

	£	s.	d.
Two buckets	0	12	0
Pike	0	1	6
Besom	0	0	6
Currycomb and brush ...	0	8	0
Mane-comb and picker ...	0	1	6
	£1	3	6

Clothing, from 16s. to £5 per horse.

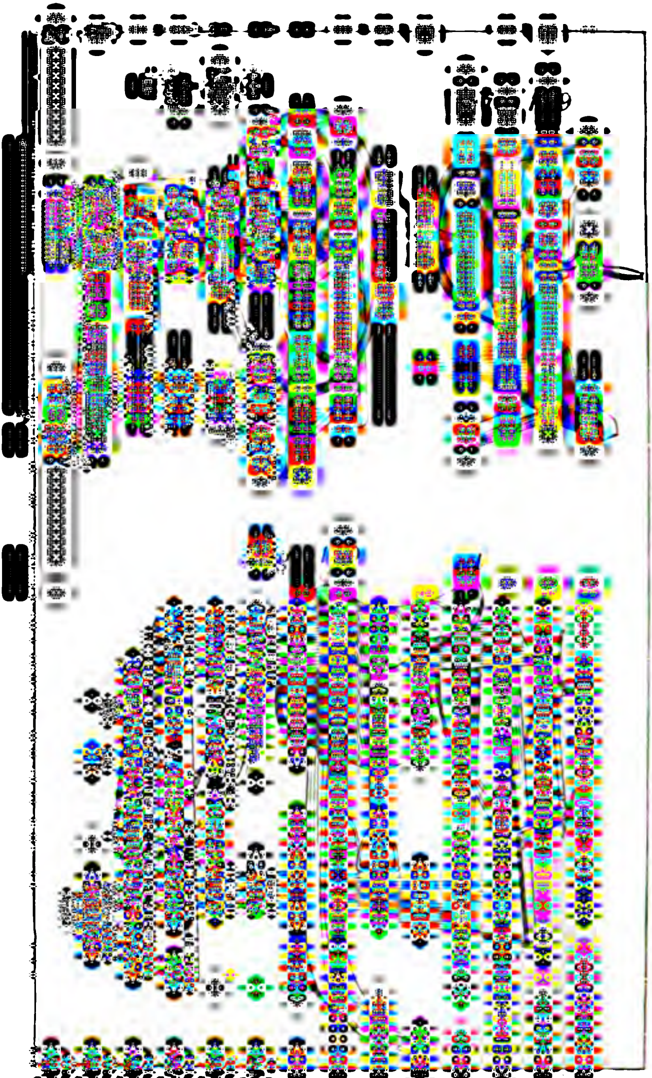
Saddle and bridle, old ones of the master.

1834. By **Grooming** is understood the general arrangement of the bedding of the horse and cleaning of his skin. It begins very early in the morning, but the precise hour depends upon that at which the stable was shut up on the previous night; for if a pair of horses are kept out till twelve o'clock at night, they ought not to be disturbed until seven or eight the next morning. In the usual way, in private stables, six o'clock in summer or seven in winter is the time for beginning work. The first thing is to give the horse a few go-downs of water and to feed him, during which the groom turns back the litter and "mucks out" the stable, by which is meant sweeping out the foul litter and the absolute dung dropped during the night. After feeding, the horse is watered, and is then at once dressed, unless he is to be exercised, in which case the bridle and saddle are put on over his clothing, and he is taken out for an hour, after which on coming in the clothing is taken off, and he is dressed over thoroughly for an hour, beginning with the head, and going gradually backwards over the whole body. Unless the horse is shedding his coat, the brush is used as well as the whisp of hay, and with some degree of force, so as to make the horse evince considerable animation from the effect on the skin, which is in fact one great cause of the utility of dressing. He is finally rubbed over with a linen rubber, to smooth his coat, and then is re-clothed and turned round in his stable, where he remains until he is fed or taken out to his work. If left in the stable, a light whisping over in the evening is all that is done to his skin; after which the bed is turned down, shaken up, and supplied with a little fresh straw on the surface, the horse is fed for the last time and watered, and then left for the night. Dressing after work is effected by commencing with the legs and feet, which should be well washed with a brush in a bucket of water; the horse may then be walked about until he is cool, if the weather is hot, or else his legs may be enveloped in flannel bandages while the body is being dressed over in the usual way. If very dirty, it is a good plan to wash also his belly and flanks, as well as the tail, with lukewarm water, and proceed immediately to dress him until dry. The ordinary plan of leaving the horse in the stable in all his wet and dirt, until he is dry enough to rub it off with a broom in the state of dust, is very prejudicial to health, inasmuch as it causes a great risk of giving cold, to which horses are especially liable. Besides which the irritation of the besom is such as to render many horses so savage, that they care not what they seize hold of, and for this receive a chastisement which ought to be reserved for wilful vice. Under ordinary circumstances there is no harm, after washing the flanks and scraping them with a scraper, in putting the clothing on loosely and feeding the horse, taking care to bandage the legs with flannel to prevent them chilling, and in the interval the skin becomes almost entirely dry, and will easily become completely so in the subsequent dressing.

1835. THE FEEDING OF THE HORSE ought to be at regular hours, with the same amount of food; upon attending to which, in great measure, depends his health and strength. He does not seem, like man and the dog, as well as horned cattle, to require a constant change of food, but will go on for a long time upon the same without injury, if the quality is suited to him, and it is given at regular intervals of about four or five hours each. Four feeds a day, one being given, as nearly as may be, every four hours, seem to suit the horse better than any other division of the time; and it is therefore usual to divide his corn into that number of measures, and to give him his hay in the morning and evening only. A full-sized horse requires from eighteen to twenty-four pounds of food daily, the usual proportion being from three-quarters of a peck to a peck of oats, and about ten to twelve pounds of hay; to which is added in bad weather about one or two pounds of split-beans. Many substitutes for this food are used from motives of economy, or as an occasional change, but the above forms the staple food of the horse, and the average quantity of it in Great Britain.

1836. BRAN, CARROTS, VETCHES, AND LUCERNE form the chief varieties in the horse's diet in the stable, and they are all useful in their way. Bran is mainly employed as a cooling laxative, made into a mash, and as a vehicle also for linseed and other occasional changes of food used medicinally. It is given before and after medicine, and forms the main agent in the stable for aiding purgatives in their action. *Carrots*, *Vetches*, and *Lucerne* are all given as alteratives, approaching more nearly to grass in their nature than dry hay and oats, and serving therefore to freshen up the stomach, when long confined to hard food.

1837. THE HAY used in the private stable should be of good upland quality, or if cut into chaff, as is often done, it should be clover-hay, cut up with barley or wheat-straw. It is found, that when cut in this way with the chaff-cutter, a much less quantity of hay will nourish the horse than if put into his rack; and the reason for this is, partly, that straw is used with it, and, partly also, that there is no waste occasioned by the hay being dropped among the litter. The latter objection is avoided in great measure by the adoption of the modern low manger, advocated at page 158. The chaff-cutter is, however, a valuable appendage to every stable, and no one who values either his pocket or his horse's health should be without it in some shape, or at some price. Hay is of three kinds—1st, *meadow hay*, a natural grass, but growing in flooded situations; 2nd, *upland hay*, also natural, but growing out of flood's way; and, 3rd, *clover hay*, the produce of



artificial grasses, chiefly red clover. Upland hay is that best suited to private horses, being sweet, and not too rank; meadow-hay is only fit for very slow-working horses, or for cows, while clover is too rich and luxuriant, unless it is mixed with straw in the shape of chaff. The fresher hay is from the rick, the better it seems to suit the horse, and therefore more than a single load should not be put in the loft at one time. It should be purchased direct from the farmer, if in the country, or at the nearest hay-market, if in London, the price being generally easily arrived at; but the quality varies immensely, though this ought to be pretty well known to the groom or coachman, who will, of course, give his opinion, if consulted, on the matter. Bad hay is dear at any price, as it leads to all sorts of diseases, and is far worse than bad corn. It should not be used in the year it is made, but after Christmas it is generally fit for consumption in stables where hack and harness horses only are to be fed. The average price of late years has fluctuated from between £4 and £5, generally nearer the latter sum. Hay is made up in trusses of 56 lb. each, so that the master can easily check the consumption by attention to this part.

1838. **STRAW** is used partly for litter, and partly for the purpose of cutting into chaff, &c., with hay. The quality varies greatly, wheat straw being the best; next to which comes barley straw, which is however quite as good for cutting up into chaff. Oat straw, and even the haulm of peas and beans, are used sometimes as litter by farmers, but the two last are hard and lumpy, and make a poor bed for the horse. Straw is made up into trusses of 36 lb. each; but it is sold by the ton, the price being generally about half that of hay.

1839. **CHAFF** is hay cut up with straw in a machine called a chaff-cutter (see *fig.* 148, which represents the most common form suited to private stables, and is to be purchased for about £5). With this machine the groom can readily cut a week's consumption of chaff for two horses in half an hour; that is, supposing it to be wanted only as an auxiliary to other food, and not as the sole material in conjunction only with corn. Among the omnibus and cab horses all the hay is cut into chaff, because it is desirable to facilitate the horse's means of taking his food, so that he may lie down to rest as soon as possible after he has done work. But, on the contrary, in the private stable the object often is to amuse the horse, and keep him out of mischief. Here, then, chaff is only useful from the economical motive of inducing the horse to chew his corn, which object it accomplishes most fully, and it should therefore be regularly used in every private stable to an extent sufficient for that purpose, which will, however, only require an amount about equal in bulk to the corn. The ordinary plan is to mix good clean and sweet straw with clover and upland hay, in the proportion of nearly two of straw to one of hay.

1840. **OATS AND BEANS** form the only horse-corn used in this country, they being found by experience superior to all others, in every point of view. Even with regard to price they cannot be surpassed, so that there is no objection whatever to be alleged against them. Oats are sold by the bushel, generally of 39 lb. weight; but this varies with different localities, and is subject to specific bargain. Beans, also, are sold by the bushel, the weight being 60 lb. Oats are always given to horses in private stables, and they form the best general addition to hay; but in wet weather they are scarcely sufficiently stimulating, and require the aid of beans for that purpose, especially if the horse is much exposed to the influence of the weather. The usual proportion is a quartern of oats, with half a quartern of beans for a feed, or the oats alone. For young horses which are not very greedy in their feeding, the oats may be given as sold, taking care to remove the dust by sifting, and the stones by picking them out as they lie in the sieve, but the beans should always be split. For old horses, however, and for all quick feeders, the oats, as well as the beans, should be reduced into a coarse state of sub-division, called bruising, or "kibbling;" this is effected by the **OAT-BRUISER** (*fig.* 149), which is sold by all machine-makers, at prices varying from £2 12s. 6d. to £5 5s., according to the quantity bruised per hour. This machine, sold at about £4 4s., fixed as shown in the figure, will bruise about 2½ bushels per hour, or split nearly that quantity of beans—a turn of a screw being necessary to make a requisite change in the machine before altering from one kind of corn to the other. In old horses corn prepared in this way goes quite half as far again as before, because, without it, a large quantity of the corn is undigested, and is therefore quite useless as a means of nourishment. **THE PRICE OF OATS** varies very much, according to the quality, which again depends upon the growth and kind; thus English oats always fetch more than Irish, Welsh, or foreign oats, partly because they are expected to be more sweet from not being collected in cargo, and also from being used as soon as they are thrashed, or soon after. They are, also, generally free from stones, and are not injured by kiln drying. They generally weigh considerably more per measured bushel than Irish or foreign oats, but both are sold at a specific weight. Irish and Welsh oats are lighter than the English, and certainly inferior in all respects, but they may almost always be purchased at a price which gives a greater bulk of nutritive matter for the money than the English oats. Foreign oats are seldom equal to them. English beans are a very superior article to any foreign sample, and fetch a correspondingly high price; but the latter may sometimes be bought at a remunerative price, which may readily be calculated, as they are sold by weight. The following list of prices will exemplify these assertions:—

PRICE OF HORSE-CORN IN THE LONDON MARKET IN AUGUST, 1856.

	Per Quarter.				
	s.	d.		s.	d.
Essex and Suffolk oats	23	0	to	27	0
Scotch potato	26	0	,,	30	0
English feed	23	0	,,	26	0
Irish potato	23	0	,,	27	0
Poland feed	24	0	,,	29	0
Beans, Mazagan	36	0	,,	38	0
Tick and harrow... ...	37	0	,,	40	0
Foreign (small)	38	0	,,	41	0
Egyptian	33	0	,,	34	0

1841. THE OUTLAY FOR FEEDING UTENSILS is as follows:—

	£	s.	d.
Chaff-cutter	5	0	0
Oat-bruiser	4	4	0
Quarter-peck measure	0	1	6
Sieve	0	1	6
	£9	7	0

1842. THE FOLLOWING SHORT TABLES show the outlay per week for the different kinds of horses, according to the kind of food required, and, as proved by my own experience, calculated at the above-mentioned prices for hay, corn, and straw, which last is also included both for the litter and chaff.

(*a*) HAY AND OATS for a medium-sized horse, at average work:—

	s.	d.
84 lb. of hay	3	6
5¼ pecks of oats	4	0
One peck of beans (average) ...	1	3
56 lb. of straw	1	0
One peck of bran (average)	0	3
	10	0

(*b*) CHAFF AND CORN for the same sized horse, working very hard:—

	s.	d.
1½ bushel of oats, bruised	4	6
Half a bushel of beans, split ...	2	6
28 lb. of hay	1	1½
One cwt. of straw	2	0
One bushel of bran	0	10½
	11	0

(*c*) HAY AND CORN for a horse, doing little work:—

	s.	d.
84 lb. of hay	3	6
3¾ pecks of oats	2	9
One peck of bran	0	10
56 lb. of straw	1	0
	8	1

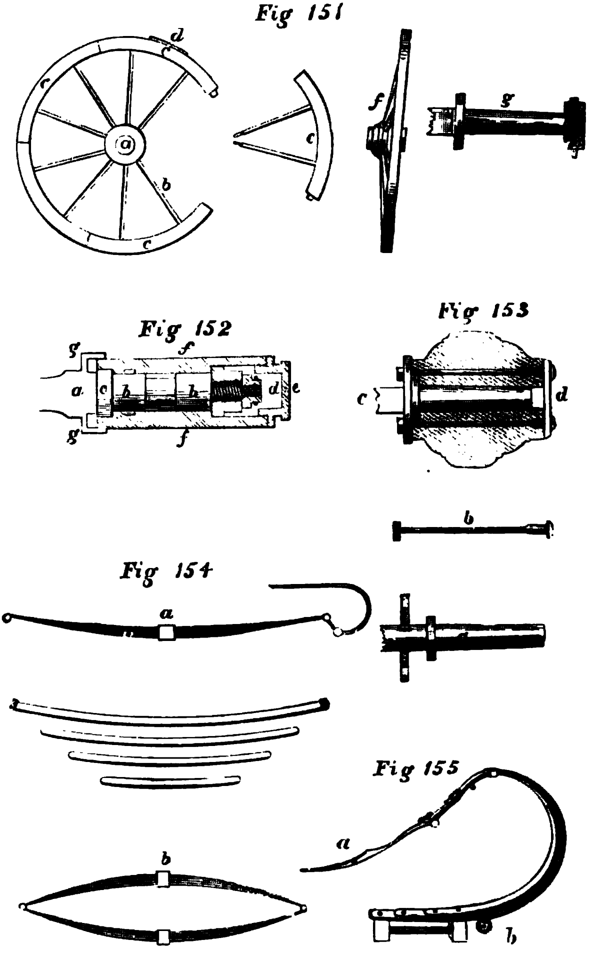
(*d*) HAY AND CORN for a pony doing moderate work:—

	s.	d.
56 lb. of hay	2	3
One bushel of oats	3	0
56 lb. of straw	1	0
	6	3

The above-mentioned amount of food will suffice, in nine cases out of ten, to keep a horse in good health and full of flesh; but some require a more liberal allowance. It is right, therefore, that the master should ascertain the constitution of the individual horse before he charges his servant with peculation or neglect. This he may readily do by seeing him feed at the proper hours for a week or two, or a month will be still more satisfactory; and if at the end of that time he loses flesh on this scale of allowance, it will be right to increase it. I am here only calculating the full *average*.

1843. FOR FURTHER DETAILS OF THE MANAGEMENT OF THE HORSE, the reader is referred to the special writers on that animal.

1844. THE EQUIPMENTS for the saddle-horse, when to be used in that capacity, are merely the bridle, which may be either the snaffle (*fig.* 150 A) or the curb (B). Sometimes the two are used together, and the bridle is then called a double-reined bridle, as shown at B; at others, the bit combines the qualities of both, and of these there are various forms under the general term of "Pelhams." The saddle consists of pig-skin strained and stretched over a wooden tree, raised in front at the pommel (*fig.* 150 C); and behind, also, is a long ridge, called the cantel (D), between which is the seat. The sides are made up by the flaps (E), attached to the tree above; and lying on the flap is the stirrup-leather supporting



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COMPONENT PARTS OF THE CARRIAGE,—WHEELS, AXLES, AND SPRINGS.

the stirrup (F). Underneath the flap is a false and padded flap, on which lie the girths (G), which are buckled to leather straps fastened to the tree above.

1845. THE PRICE of these articles is as follows:—

	£	s.	d.		£	s.	d.
Plain snaffle	0	5	0	to	0	8	0
Single curb	0	6	0	„	0	9	0
Double-rein bridle	1	4	0	„	1	8	0
Saddle	4	10	0	„	5	5	0
Lady's saddle ...	7	7	0	„	10	10	0

CHAP. II.

CARRIAGES—THEIR MANUFACTURE, REPAIRING, AND COST.

SECT. I.—COMPONENT PARTS OF THE CARRIAGE.

1846. EVERY MODERN CARRIAGE, even of the most simple construction, consists of a *pair of wheels* revolving on an *axle*, which supports a *body* on *springs*. These are drawn by the horse attached to *shafts*. In addition to the above, when the carriage is on four wheels, there is a provision for turning it right or left, and called "*the lock*," and when drawn by two horses a *pole* is substituted for the shafts. Before proceeding, therefore, to describe the varieties of carriages used in England, each of the above parts must be clearly understood; but one cause of misunderstanding must at once be removed, consisting in the different acceptation of the term "carriage" by the public, who use it for the whole vehicle, and by coachmakers, who confine it to that part which supports the body upon the wheels, including the springs and shafts in two-wheeled carriages, and what is called the fore and hind-carriage in those on four wheels.

1847. THE WHEEL is usually composed of a number of pieces of ash, with a centre of oak called the *nave* (*fig.* 151 A). This last is drilled through its centre to receive an iron box, which protects it from injury as it revolves upon the axle, and is made exactly to fit that part, so that its construction has little or nothing to do with that of the wheel, but it may be considered rather as a part of the axle. The nave is pierced by twelve rectangular holes, arranged at equal distances round its circumference to receive an equal number of radiating *spokes* (B), which fit their places exactly. The spokes, again, are let into a number of pieces of ash, the felloes (C C C), which together form a circle confined by a hoop of iron in one piece, called the tire (D). These felloes usually amount in number to half that of the spokes; and all the pieces being fitted together, but the joints not closed up, the tire, in a red-hot condition, is put on and suddenly cooled with water, by which it contracts, and brings all the parts closely together, rendering them as firm as if made of a solid piece. The parts are so arranged, that the spokes do not lie in one plane; but as the wheel lies on the ground, with the outside upwards, they run downwards; the outside of the nave being nearly level with the outside of the felloes. This gives strength to the wheel, and also throws the dirt away from those riding in the carriage; but it necessitates the bending of the axle, in order to keep upright the spokes at the time of bearing the weight, without which precaution the wheel would soon give way (see *fig.* 151 F). After this, a number of iron pins are riveted through the tire and felloes, and then the whole being "cleaned off," the wheel is complete, except receiving its box, which is called boxing, and only requires it to be inserted and wedged in its place, so as to make the wheel revolve truly on its centre. Many wheels are now made by machinery; each piece of the wood being put into a machine and turned out in a state to fit all closely together; by this process there is a saving of time in the making, but it does not appear that the wheels stand their work any the better. In America the wheels of their light carriages are made of a much more slender form, and the felloes are *bent* by the aid of steam, so as to encircle either a half or the whole of the wheel. By the aid of a new process for bending wood, this method will probably be soon adopted in this country, even for heavy wheels.

(*a*) THE SIMPLEST FORM OF AXLE is the common kind, which consists merely of a bar of iron, having a slight shoulder at the part where it comes in contact with the nave of the wheel, and a screw and nut to keep the wheel on. A plain iron box is made to fit this, and is "boxed" into the wheel (see last paragraph). This axle is shown at *fig.* 151 G.

(*b*) TO OBVIATE THE NOISE OF THIS AXLE, and its tendency to come off, several have been designed, the chief of which are Collinge's, the Mail, and Drabbel's axles. The first of these is a very ingenious invention; and when carefully attended to in its cleaning, is equal to all that is required; but if the cleaner happens to let a piece of grit get in with the oil, or the oil is at any time deficient, or if it is screwed up too tight, it is apt to set fast, and stop the progress of the carriage in the most inconvenient manner. These accidents generally occur at the worst possible places; but happen when they may, they are very annoying. Coachmakers themselves are constantly liable to them with their carriages just sent out, and no care will always avoid them. In spite, however, of these objections, the axle is so noiseless and requires so little attention, that many people use them in preference to all others. Until the patent expired, they were very expensive, and still are so as made by Mr. Collinge himself; but from other makers they may be obtained for about £1 more than the conical (Drabbel's) or the mail axle. A section of a Collinge axle is shown at *fig.* 152, in which (A B D) is the axle on which revolves the box (F F), adapted to a shoulder in the axle at (G G), and confined by a cap (E) at the outer end, which keeps in any waste oil. The arm of the axle, which revolves in the box, has several shoulders and indentations in it, which are accurately fitted by grinding to the interior of the box, but leaving three spaces for oil, one cut in the box opposite (B), and two others cut in the arm, one between (B) and (B), and the other behind (C). It will be observed, that there is a shoulder at (C), against which the box fits, being separated only by a washer of leather to prevent noise. At the outer end the arm is cut into two screws, (see D), one larger than the other, and the two turning different ways, so as to afford a double protection against the wheel coming off, as they both keep the box on, and are also confined by small copper linch-pins. The construction of this axle is thus minutely given, because many people who have them are subject to great annoyances from not being able to take them off and on, when an emergency occurs. This is effected as follows: — Unscrew the cap (E) with a spanner which is fitted for the purpose; then take out the linch-pin in the screw at (D), unscrew the outer one in one direction, which is marked on it, and the inner one exactly the reverse; then slip the wheel off, carefully clean off what dry and thick dirt may have accumulated, avoiding all risk of grit by using *a clean cloth* or *new tow*, oil the arm freely, and also the inside of the box, replace the nuts and linch-pins, screw on the cap, and the thing is done. If the leather-washer at the shoulder (C) is worn too thin, it must be replaced; but some little practice is required to adjust this to the proper thickness.

(*c*) THE MAIL AXLE is the most simple of all, and has merely a shoulder on the axle-tree with a smooth arm, without any nut whatever. The wheel is kept on by three long pins, which traverse the whole nave as well as a plate behind the shoulder. See *fig.* 153, in which (A) shows the smooth arm with its plate playing freely behind the shoulder; (B) is the pin traversing the whole nave and plate, and (C D) shows the nave and axle together. This is not quite so noiseless as the Collinge, but when very accurately adjusted, it may be made to run very smoothly, and on the average is very nearly equal to its rival in public estimation. The objection is, that from the peculiar make of the shoulder and plate, it requires about an inch between the wheel and the spring, which for London is of some importance, the two wheels making the carriage fully three inches wider than if made with Collinge's axles. In taking off these wheels, it is only necessary to unscrew the three nuts at the back of the nave, when the wheel comes off at once, and by screwing them up tighter at any time, the liberty of the wheel may be diminished, or *vice versâ*, when they are slightly unscrewed. There is also in this wheel a washer of leather, which is more easily adjusted than the Collinge axle.

(*d*) THE CONICAL OR DRABBEL AXLE is merely Collinge's principle applied to a conical instead of a cylindrical arm. It is not so liable to set fast as Collinge's, and is therefore used for heavy weights, such as omnibuses, &c.; but is not nearly so quiet.

(*e*) CARRIAGES have either two wheels or four, according to their nature, from which circumstance the sub-division into two-wheeled and four-wheeled carriages is made. The fore wheels are generally smaller than the hind, in order to allow of their locking under the body; but it is always an object to have all the wheels as large as possible, by which the draught is materially diminished.

(*f*) THE TIRE OF WHEELS is also flat, or rounded, or hexagonal; the last soon wearing off its angles, and becoming converted into the second, and both of these being fitted for light carriages.

1848. THE SPRINGS are attached to the axle by means of clips of iron and bolts. Their object is to yield to the rise or fall of the wheel in passing over the inequalities of the road, so that the body may not be affected by them. There are many varieties of springs, but they may be comprised under two distinct kinds—1st, those in which steel only is used as the elastic material, such as the ordinary *elliptic* and *grasshopper* spring (*fig* 154 A B); and 2nd, those in which it is aided by leather straps, as in the C-spring (*fig*. 155).

(*a*) THE GRASSHOPPER SPRING consists of an indefinite number of plates of steel riveted together in the middle, where the spring lies upon the axle-tree, and is attached to it by a clip. (See *fig*. 154 A.) One plate, longer than the others, has a rolled eye at each end, by which it is attached to the body, and is of equal substance in its whole length; the others are each gradually shorter than the one above it, and are ground to a thin edge at their ends, so as to play freely upon the plate next above each. By this arrangement the spring is much more lively and elastic than it would be if made of a solid piece of the same steel, and it will also bear greater weight without breaking. As the spring when bent is shorter than when perfectly straight, one end must have a certain degree of liberty, or the spring will either break or refuse to act. This object is effected by means of a shackle or brace, the former being of iron and the latter of leather, but serving the same purpose (see *fig*. 154 A), and the shackle itself carrying a loop of iron which is attached to the body. This spring is used for Dennet gigs and for dog-carts, also for heavy work, such as omnibuses, stage-coaches, &c., and is a very useful spring, but liable to "chatter" at the shackle, for which reason the leather brace is sometimes substituted.

(*b*) THE ELLIPTIC SPRING (154 B) resembles two grasshopper springs greatly bent, and one placed on the other, with their eyes united by pins or bolts. The axle is clipped to the lower one, and the body to the upper, each being attached to the middle of the spring, so that as the plates play the middles of the spring approach each other, and the ends are allowed to lengthen without any necessity for shackles. In stiff springs for heavy weights they sometimes refuse to play equally, and the consequence then is that one of them breaks, to avoid which they are sometimes made with eyes only at one end, while at the other one plate lies flat on the other, being retained in its place by a clip on each side. These springs are used for the hind carriage of light phaetons and for the fore carriage of all those vehicles which are without perches, as the mode of attachment suits their make.

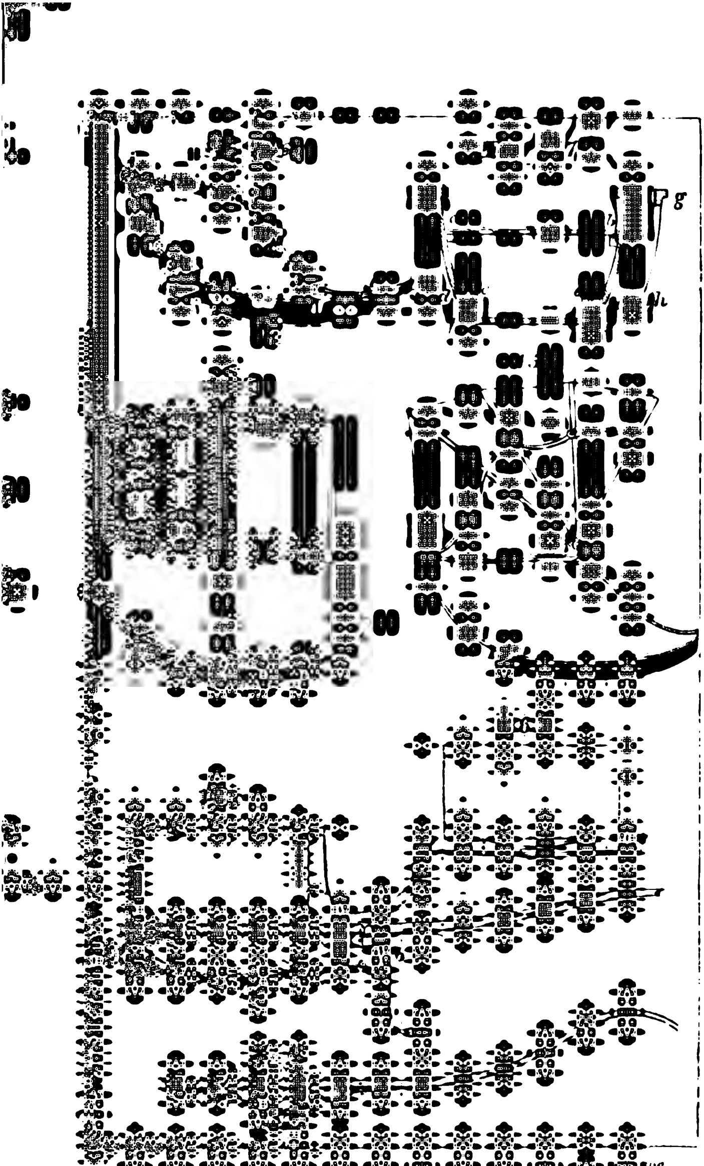
(*c*) C-SPRINGS are made in the same way, as regards the steel plates of which they are composed, but these are bent into the form of the letter from which they take their name (see *fig*. 155). The lower end of the C is attached by bolts to the carriage, the middle projecting backwards or forwards, and having a long leather strap or brace which reaches from the carriage over the spring to an iron stay (A) projecting from the body, and called a loop. In order to regulate the height of the body, which is apt to stretch the leather, this is made to roll upon a racked wheel at (B), which is turned by a key, and easily lifts the body by rolling the brace upon its barrel. This spring is the easiest of all, but until lately it has been quite out of fashion, in consequence of the supposed necessity for a perch, which, we shall presently see, increases the weight and draught of the whole. But as there is no other spring which is equally easy and quiet, it is gradually regaining its former position in public estimation. By a recent invention, however, this spring has been made without a perch, and thus one great objection to its use has been overcome, though still it is, in this form, only capable of being attached to the hind carriage, leaving the fore-parts to be as rough and noisy as ever. The improvement consists in doing away with the perch, and carrying the spring from the axle-tree to the body, where it is attached at a short distance beneath the stay, which, also, is here composed of an elbow-spring instead of a rigid iron stay. There is no great advantage, however, as the weight is not much less than that incurred in the manufacture of the perch, &c., whilst the necessity for the elliptic spring in front is a great objection to the new invention. It is chiefly used for Broughams, and has a very light and elegant appearance.

1849. THE BODY is made of wood, and is either of ash framed together in separate pieces, and containing a panel of mahogany in a groove, or it is composed of solid elm, with a moulding sprigged on to make it resemble the framed body. This causes a great difference in the cost of bodies, which may be made in either way when they are tolerably flat in surface, but must be framed when they are convex or "compassed," which is the coachmaker's term. It is true, that elm will bear a considerable degree of bending and hollowing when steamed; but there is a limit to this, and the coachmaker finds that, if a body is required with much elegance of form and variety in its lines, it must be made on the framing principle. Many purchasers are wholly ignorant of this difference, and expect to procure a framed body for the price at which they are offered one with solid sides.

(*a*) THE SOLID-SIDED BODY is made like a wooden box, that is to say, the sides and bottom are fitted together on the ordinary principles of joinery. *Fig.* 156 shows the essential parts of the simplest kind of body, either for two or four wheels, and called a cab-body. This, if very plain, may be made solid-sided, and as such will now be examined. A piece of inch-elm is first cut out a little larger than the part marked by the letters A D C E; this is then steamed until it will bear bending, after which it is made to assume a slightly convex form, shown in the section 157 C D, assisted by a moulding sprigged on to the edge. When this is dry and set, another piece of wood, usually ash, and shaped to the sweep, is screwed on to the bottom, and extends from D to F in a longitudinal direction in *fig.* 156, and in *fig.* 157 from D to E. This is the "bottom-side." Projecting perpendicularly from the inner edge of the bottom-side is the "rocker," a short piece of ash or elm, upon which the strength of the body in great measure depends, and shown at *fig.* 156 E, and *fig.* 157 E F. The object of these two pieces, viz., the bottom-side and the rocker, is to narrow the lower part of the body so as to give room for the springs, and also to take off from the heaviness of the whole. It is obvious that the feet and legs do not require nearly so much width as the hips, and consequently the part intended for their lodgment may be contracted, and is so in all modern carriages, by the adoption of the bottom-side and rocker. The two rockers are connected together by a light piece of wood, usually fir, upon which little stress is laid, and which is called the bottom, or "floor." This is assisted at the back and front by a stout piece of ash morticed into the rocker at each angle, and called back and front "bottom-rails." The two sides thus put together and connected at the bottom, are still further strengthened by a top-rail at the back, morticed at *fig.* 156 A, on each side, and by other seat-rails at the back and front of the seat shown at *fig.* 157 A B. By these various stays the whole is put together firmly, and in a simple body like this nothing more is necessary to complete it, except the addition of a thin panel of mahogany nailed on the back from the top to the bottom-rail, and sprigged also on to the sides from A to D, *fig.* 156, and, in fact, occupying the whole area shown in *fig* 157. Such a body, with or without a head, and furnished with a dash-iron in front, and also lined, aproned, &c., is complete as a cab-body, and makes either a two-wheeled cab or a cab-bodied phaeton, according as it is mounted on two or four wheels; in the latter case, however, having usually the rocker extended either backwards or forwards to form a hind-seat or driving-box.

(*b*) THE PANELLED BODY differs from the foregoing in having the sides and back put together in pieces, which in a simple body, like that previously described, would consist of a top and bottom-side (*fig.* 156 A B and D C), and of a hind and fore pillar (A D and E C). These four pieces would form the skeleton of the side, and would be framed together very strongly, yet neatly, each being dove-tailed into the other, and pinned together as well as screwed. After they are cut into the general form of the side so as to have the desired sweep, and their joints being carefully made, they are taken apart, and a groove is ploughed on their internal faces, so as to run into each other, and form one continuous groove, in which a mahogany panel is afterwards fitted, as shown at *fig.* 157 G H. The inside of the hind pillar (*fig.* 156 A D), must also be grooved so as to receive the back panel, which is let into the rails, top and bottom, and beyond these points of difference the whole is completed in the same way as the solid-sided body, except that the panel requires to be strengthened with wooden battens, and canvass glued against any part which is more than usually strained by any peculiarly twisting part of the frame. Many bodies are much more complicated than this; but in all the principle is the same, and each panel is let into a groove cut in the pillars, which are perpendicular, and in the side-rails, which are horizontal. These frame-works have also their outer edges moulded variously according to the fashion of the day, being sometimes merely rounded off, and at others having a concave thumb-moulding taken out of them; but in all cases superseding the necessity for any beading being sprigged on as in the solid-sided body. From the complicated nature of these jointed or framed bodies, it follows that if they are not carefully made of well-seasoned wood, they soon separate at the joints, and either allow the body to come to pieces altogether, or else permit the water to reach the interior of the joints, and so cause a premature decay. So that, though a well-made framed body is far superior to one with solid sides, yet, in the hands of an inferior workman, the latter is the more safe and lasting mode of construction.

(*c*) THE BODY IS COVERED IN, either permanently by means of a wooden frame (*fig.* 158), or at the pleasure of the passenger, by



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means of a covering capable of being let up or down, and called a head, or hood (*fig.* 159). In the former case, the pillars are carried up in one piece, and then a light roof of fir is put on, blocked with square pieces of the same wood glued on the under-side, and covered with a stout leather skin of cowhide. This is strained on very tightly by means of a thin band of copper, which exactly fits the edge of the roof, and keeps all in its place, without any necessity for nails. The back and sides between the pillars and above the bottom panels are closed by mahogany panels also, but sprigged on instead of being let into grooves. A door is framed in the ordinary way, and panelled in the lower half, while the upper is either closed with a glass-sash, or this part falls into a box or cavity made for it inside the lower panel. The front is closed also in the same way, so that a close carriage is completely protected from the weather when its glasses are up, or when let down the air is freely admitted; the only objection being that it is not as freely let out again.

(*d*) THE HEAD, OR HOOD, consists of leather strained upon wooden hoops, called "slats," which rise or fall upon a common centre (*fig.* 159 A). Four of these are required to form a head, and they are kept in shape by webbing strained from one to the other, and by joints attached to two of them only, which, being made to play in the middle, will give way when pulled out of the straight line, and allow of the head being lowered. The leather used is now almost invariably that called enamelled, of which, however, there are several qualities and prices, some being very durable, and others soon cracking and letting in the wet. Besides this covering of leather, the front is protected either by glass in the shape of German lights, which fold up and are made with mahogany frames, or by Macintosh curtains drawing on a brass rod.

(*e*) BODIES may, therefore, be divided—1st, into solid-sided and framed; 2nd, into open bodies, close bodies, and headed, or hooded bodies; and, 3rd, into double and single bodies, the former of which have two seats, while the latter have only one.

(*f*) THE DRIVING-SEAT of a close carriage is usually called the coach-box, and may either be a plain seat, with iron bars for sides, protected by leather, in addition, or else it is covered with a large falling cloth, called a "hammer-cloth," from its concealing the box in which a hammer and nails were formerly carried in case of accidents.

(*g*) THERE is also in many carriages a back-seat, sometimes called a rumble, which is either fixed to a continuation of the rocker or attached to it by means of iron stays, called loops.

(*h*) EVERY BODY is also lined and provided with aprons, &c., the workmanship of which is a separate department called trimming. The lining is either of cloth, or leather, or silk, or a mixture of these, and padded with well-curled horsehair. In expensive carriages, also, there is a good deal of lace used, which is of a costly character.

(*i*) THE DASH-IRONS AND WINGS are, in well-made carriages, made of a frame-work of iron, covered with patent leather; but in some low-priced ones, especially those for ponies, a thin piece of elm is fixed, and has a beading sprigged on to imitate the lines of the irons. In this, also, an inexperienced judge is often taken in.

(*j*) APRONS of enamelled leather are fixed to open carriages, and to the outer seats of closed ones, so as to protect the knees of the passengers. As in the case of the heads, this leather varies greatly in its value and price.

(*k*) BASKET WORK has of late years been extensively used for open carriages of all kinds, chiefly made by Denny, of Croydon, whence they have been named Croydon Basket Carriages. The material is cheap in first cost, but does not last well, and will not therefore, I think, long maintain its recent popularity.

1850. THE WHOLE VEHICLE, besides the wheels, axles, springs, and body, is composed of a connecting medium, called the carriage, see par. 1846, which, however, properly includes the springs. It varies from a mere cross-bar or two to the very complicated machinery exhibited in the chariot or barouche. TWO-WHEELED CARRIAGES, with the exception of those on C-springs, have only the iron stays by which the springs are attached to the bodies, and also, in general, a fore and hind bar, as well as a pair of shafts. Four-wheeled carriages are, however, much more complicated, and consist in all cases of a fore and hind carriage, which may or may not be connected by a perch, and of which the fore carriage has always a wheel-plate, with its appendages, in order to allow of the free movement of the fore-wheels to the right or left. All these parts must therefore be separately examined.

(*a*) THE CARRIAGE OF THE TWO-WHEELED VEHICLE varies considerably, simple though it is as compared with the four-wheeled carriage. In its most simple form, as in the dog-cart or plain gig, there is first of all a curved stay at the back and front of the grasshopper spring (A B 160), to which they are attached by bolts behind, and a shackle in front (see *fig.* at B). The stays themselves are bolted to the rocker of the body, and the front stay has attached to it steps for allowing entrance or exit. The shaft is fixed to the fore-bar, either by a solid and fixed iron flap clipping it, or by a joint which allows of free motion, in which case the shaft is of lancewood, and its play is favoured by being attached to a cross-spring fixed to the body at the back, as shown in *fig.* 161. By this provision, the trotting action of the horse causes little or no shaft-motion, the bar at (B) being a centre upon which the shaft partially revolves, and the spring at the back in the same way allows that part of the body to remain quiet.

(*b*) IN THE STANHOPE, the shaft is of ash plated with iron, and therefore inelastic. It is not directly connected with the body, but only through the axle-tree, to which it is separately attached by an iron stay (*fig.* 162) and, as a consequence, every jar from the inequalities of the road is communicated to the horse's back, often causing inflammation of the skin or bones of the spine; the body also, instead of being connected to the grasshopper springs by iron stays, is fixed to them by straight cross-springs, which are attached to it only in two places, one in the middle of the fore and hind bottom-rail. Shaft motion is therefore almost wholly destroyed in this gig, being lost from the play of the springs before it is communicated to the body; and, besides this, the Stanhope is the easiest of all, from its possessing four springs instead of two, as in the plain grasshopper, or three, as in the Dennet, in which the grasshopper has a back spring like that of the Stanhope, but is connected, as in *fig.* 160, in front.

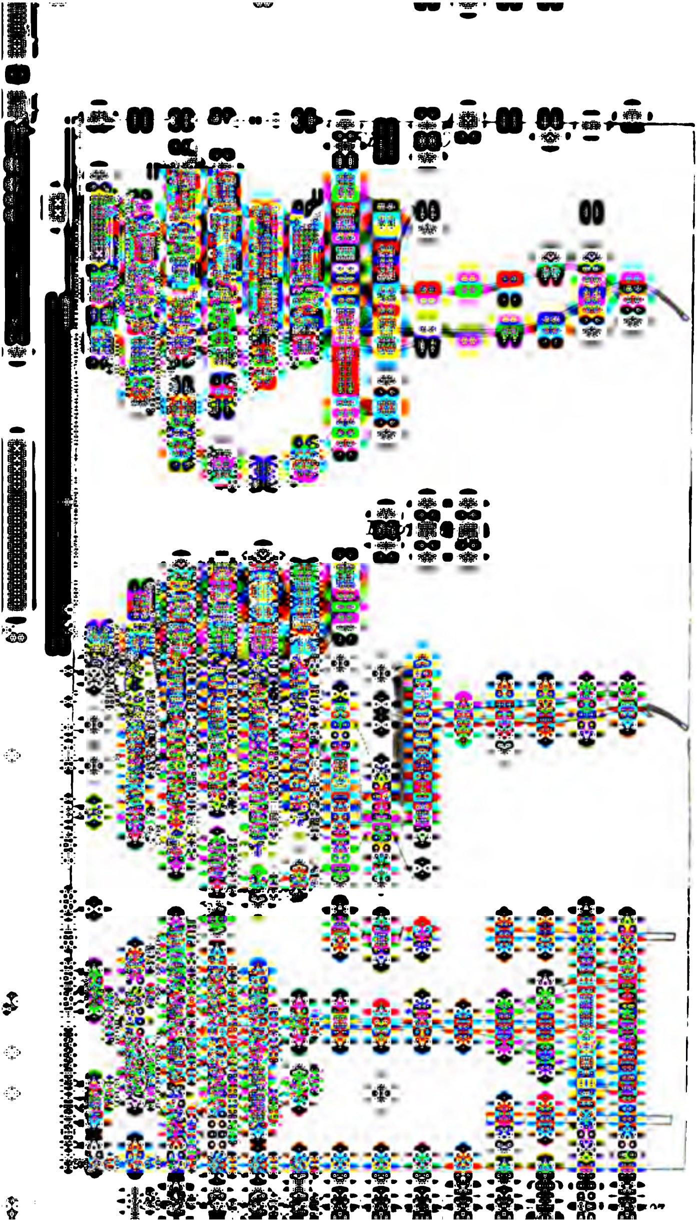
(*c*) THE TILBURY was invented in order to give softness to the steel springs by its long leather braces, and this it does most effectually, but at the cost of gaining shaft motion, which can never in it be totally got rid of, though much may certainly be done by careful management of the springs. The shaft is like that of the Stanhope, and is sometimes fixed in the same way to the axle-tree, or more commonly it is attached to it by a grasshopper spring (see *fig.* 163) and stays similar to those shown at *fig.* 160. This, therefore, may be called the under-carriage, which is complete in itself, and upon it is reared a hind-carriage, or T-stay and spring (163 B), of which the lower part is iron-bolted to the hind bar, while the upper part is a cross-spring, having attached to its extremity, on each side, a long leather brace, which falls to take at (C) the end of an elbow-spring, attached to the body at (D). These springs and braces, therefore, support the hind-part of the body, while the fore-part is suspended to the shaft some inches in front of the drawing-bar, by means of another brace and elbow-spring attached to the rocker. If the T-stay is fixed quite upright, and the braces have liberty to play, the shaft motion is very unpleasant; but if they are made to slant, and the braces are drawn apart, this is in great measure got rid of, though still slightly annoying. The softness of the motion is, however, very agreeable.

(*d*) IN PRIVATE CABRIOLETS the principle is the same as in the Tilbury, except that instead of the hind-brace being suspended from a cross-spring on a T-stay it falls from a C-spring. In all other respects the two are identical as far as the carriage part is concerned, with the addition, however, to the cabriolet of a double cross-bar behind, with a foot-board on it for the servant. The shape of the body is, of course, varied, but that has nothing to do with the part we are now considering.

(*e*) IN THE HANSOM SAFETY CAB, the principle upon which the carriage part is constructed varies but very slightly from that already described as the Dennet spring. The body is required to be very low for the convenience of access, and therefore the shaft is not carried backward behind the dash-iron, but is there attached to three strong iron stays (see *fig.* 164). The springs are three, one on each side, with a cross-spring at the back attached to the foot-board of the driver's seat. In order to allow of these springs taking the weight in front, a long coupling iron is generally attached to them, and also to the rocker below. An improvement in appearance has been lately made in these cabs, by which this is done away, and the side-spring is not carried beyond the front-pillar of the body, to a cross-spring behind, to which it is bolted, (see *fig.* 164). But these cabs are not so easy as those of the original construction.

(*f*) IN THE CURRICLE, the springs and carriage are the same as in the cabriolet; but instead of shafts for one horse, a pole is introduced, and firmly socketed to the fore bar, for the purpose of allowing the attachment of a pair of horses. This is accomplished by suspending the pole to a metallic curricle-bar, extending from the top of one harness-pad to the other through eyes in which it plays freely, and thus permits the horses to approach one another or recede, according to the undulations of the road.

(*g*) THE CARRIAGE OF THE FOUR-WHEELED VEHICLE is, as before remarked, much more complicated and varied than those hitherto described. In the first place we may examine those in which there is no perch, and here we shall find the hind carriage somewhat resembling a modification of the whole parts seen in the two-wheeled vehicles. Thus we may have a grasshopper-spring, or C-spring, or Dennet spring attached to the



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hind part of a phaeton or Brougham, even without a perch, as explained by *fig.* 165 and par. 1848 (*c*). All that is required is a stay on each side to attach the spring in a firm manner, so that the wheels and axle-tree always retain the same relative position to the body, and are not liable to a cross-pull. This object, therefore, is very simple, and although there are a variety of springs invented and used, yet there is little difference in their principle, and scarcely any in their relative advantages. None is more easy than the C-spring as adapted to Broughams without a perch, but it is heavy, and increases the draught very considerably. Most of the grasshopper-springs, however they may be modified, require a projecting stay from the body, which is commonly called, from its shape, a "pump-handle."

(*h*) THE FORE-CARRIAGE of every four-wheeled vehicle is made of the same parts and acts on the same principle, though it varies greatly in its details and attachments. Its object is to allow of the rotation of the front-wheels, which is accomplished by dividing it into two parts. Its most simple form is seen in the perched carriage, therefore it will be better to examine this first. *Fig.* 165 shows the carriage entire and separate from the body; (A) is the hind carriage, consisting of the bed (A) and transom behind it, to which is securely fixed, by the aid of two side-stays (wings), the perch (B), which connects it with the fore carriage (C), the upper part of which is firmly bolted to the perch, and consists of two cross-bars called the horn-bar (D), and the fore transom (E), the two being connected together by four stays, the middle ones of which are prolonged forwards as much as behind the transom, and support a horizontal circular plate of iron, the "wheel-plate" (see *fig.* 166 A B). In the centre of the transom is a perpendicular hole protected by iron, in which is placed a strong iron pin, called the perch-bolt, because it passes through the end of the perch, and unites it strongly to the fore carriage. These parts are all firmly fixed, and do not alter their relative positions to each other, and to them the body is attached above by means of the springs bolted to them. The lower fore carriage lies under the upper, and is only connected to it by the perch-bolt which passes through its principal part, the "fore-bed," in which the axle-tree is firmly fixed. The *fig.* 166 shows this fore-bed in its place, at (A B), and also below in a separate form at (C D). In order to allow the horses to move it, two pieces of ash plated with iron, and called futchels, are morticed into it at (E F), and gradually approaching each other as they pass forwards, they form a narrow opening, "*the chops* of the futchels," in which the pole is fixed by means of a cross pin of iron passing through all three. But the bed requires steadying in its place, and for this purpose two cross-pieces of wood, or iron, or both together, are fixed upon the futchels, and so as to correspond with the shape of the wheel-plate, which, as already mentioned, is firmly united to the upper carriage. The hinder of these cross pieces, at (G), is called the sway-bar, and that before, at (H), the felloe-piece; both together complete, with the bed, a circle, which is accurately adapted to that of the wheel-plate; and as the two are kept firmly together by the perch-bolt, and are well greased, there is very little play in this part, excepting in the desired direction. The object of this construction is to allow of the rotation of the lower part of the fore-carriage upon the upper, carrying the wheels with it; but sometimes it is desirable to avoid striking a particular part of the body with the fore-wheel, for several reasons, the chief of which is to get a high wheel without, at the same time increasing the distance between the two pairs. To do this, an eccentric lock is adopted, so contrived that the perch bolt is thrown forward and out of the straight line between the wheels, by which a saving of some inches is effected. Other expedients are also adopted, but they are too complicated for general use. Lying upon the chops of the futchels and bolted to them, and also fixed to the bed by iron stays, is the drawing-bar (I J), to which the traces are attached. This bar has usually rising from it four pins, called roller-bolts, which receive the open loops of the traces; sometimes, however, swing-bars are fixed to it, and then the traces are attached to these by open eyes. Such is the construction of the fore carriage when there is a perch; but, in its absence, the transom and horn-bar are bolted to the front of the body, and the bed is separated from the axle-tree by the front springs, which are almost always of the elliptic kind (see par. 1848 and *fig.* 160). In these fore carriages it is now the custom, instead of making the futchels approach each other, as in *fig.* 166, to separate their front extremities, as in *fig.* 169; and thus when one horse only is used, there is room for his hind-quarter between them. The plates at the end of the futchel are made open so as to receive between them a shaft; or, when a pair of horses are driven, a block attached to the drawing-bar (see *fig.* 169 A B). In this case the pole is fixed in an iron socket attached beneath the bar, and into another screwed in front of the bed. It will thus be seen that all the same parts exist, both in the fore-carriage with a perch, and in that without that addition; but there is this difference, that in the one case the bed and axle-tree are connected together, while in the other they are separated by a spring on each side. In the same way in the perched carriage the springs, instead of being inserted as above, are introduced between the transom and horn-bar, and the body.

(*i*) THE HIND-CARRIAGE, with a perch, consists of the bed, with which the axle-tree is united; and behind this lies the transom or spring-bar, as it is variously called. The perch may be straight or compassed, sometimes so much so, as to be called swan-necked. All the carriage is either of ash, plated with iron, or entirely of that metal. In the modern light carriages the perch is entirely of metal, and looks scarcely strong enough for the leverage which it has to bear. Two C-springs are usually fixed upon the transom and bed behind, and also upon the transom and horn-bar in front; and in this way the body is suspended by the braces catching hold of iron stays, called body-loops. The braces, at the bottom of the C-springs, pass round *jacks* (*fig.* 155 B), by which they are tightened. In most of the modern carriages with perches, a grasshopper or elliptic spring is introduced between the bed and the axle, exactly as in those without perches, by which their smoothness is increased. When a platform for a servant is introduced, it is now generally suspended upon the loops, and not on the transom, as was formerly the case.

1851. THE SHAFTS OR POLE are the two modes of attaching the horse or horses to a modern carriage, the former being used for a single horse, while the latter is intended for two. The shafts vary somewhat according to their intended application to a two or four-wheeled carriage, in the one case being a complete fixture and only relieved by their own elasticity, while in the other they are furnished with a joint allowing of play in a perpendicular direction, and fixed at the front end of the futchels in most modern carriages, as in *fig.* 172. In these, however, a drawing-bar is negatived, which is rather an objection, as it relieves the horse's shoulders very considerably. It is merely a wooden bar, nearly the width of the shafts, and having its extremities furnished with eyes or hooks for the attachment of the traces. The pole also, as used in England, is a very simple instrument, being firmly fixed to a socket either in the chops of the futchels or to the under side of the splinter-bar and bed by iron sockets and a pole-pin. In this mode of attachment the fore-end of the pole is held downwards by the weight of the carriage, and is a fixed point for the horses to back the carriage by. In America, however, a pole is much used which has a joint at the splinter, by which it is allowed to play freely upwards and downwards. The object of this is to avoid the strain upon the fore-carriage which the fixed pole causes, for by the adoption of this joint the only strain is sideways, and in that direction the lock allows of free motion. Many people may fancy that this free play of the end of the pole is attended with danger; but the only probability of accident arises from the risk of the collar slipping over the head of the horse, an accident very easily prevented by the use of the breastplate. An excellent modification of the American mode of using this pole is shown at *fig.* 168, but this of course would only be applied to light carriages with correspondingly light poles, because the weight of that part is carried by the horses, instead of by the carriage, as in the English mode. This pole requires to be firmly fixed to the splinter-bar, which plays freely in the futchel-ends, just as the shafts do, having two blocks fitted to them and bolted in the usual way (see *fig.* 168 B). To the end of the pole, pole-pieces of the ordinary description are attached, but sliding freely on the pole itself is an iron bar with a large jointed ring at each end, through which the pole-piece passes as well as through the hame-ring, and thus the collar not only keeps back the end of the pole in the usual way, but it also keeps it down, with liberty enough afforded to the horses by means of the jointed ring on the end of the bar. The horses are rendered much more steady in their draught, because the bar acts immediately on the pole, and they are also prevented from separating too widely, or from shouldering the pole, as they so often do. Altogether, from a short experience of its merits, I am inclined to believe this a decided improvement on the English method of attaching two horses to a *light* carriage.

1852. THE DRAG consists in a mode of preventing the revolution of one or more wheels, so that by their friction on the ground the progress may be retarded. The most simple form consists in a mere chain, which is attached to the body, and when used is passed round a felloe of the hind-wheel, and then hooked again up to the body. This, however, cuts the wheel sadly, and also wears out the tire unequally, so that it is not employed for private carriages. Next to this comes the drag-chain and shoe which are attached to the body or carriage near the perch-bolt; and the shoe, when dropped in front of the wheel, with a properly adapted chain, allows the tire to enter its grasp, and then lifts it off the road (see *fig.* 170 A). The patent drag is however more extensively used (see *fig.* 170 B), in which a lever is used to press an arm of iron, guarded with wood against the tire, and so either partially or entirely prevent the revolution of the wheel. Its tendency to strain the carriage is, however, an objection with many people.

1853. Having now described the several parts of which the carriage, in both its senses, is composed, it is only necessary to allude to the painting and varnishing, which are very necessary parts of its construction. It is, in the first place, requisite that the surface shall be rendered very true, and this is done by brushing on coat after coat of lead paint, and then, when dry, rubbing them down with pumice-stone. A paint made up with powdered slate is now used instead of lead, and accelerates the progress of the work very materially, producing a very level surface, and not being liable to crack. When a true under-surface is thus obtained, the final colour is applied, and rubbed down also once or twice, the last coat being put on in a very thin layer, and allowed to remain without any further friction, when it is pricked out with what lines of contrasting colour are thought desirable; and, finally, one or two coats of varnish are applied, and the whole work is done. This varnish, however, is in very elaborate close carriages rubbed down with the hand, until the surface is made still more smooth than before; but this process is now seldom resorted to.

SECT. 2.—VARIETIES OF MODERN CARRIAGES.

1854. THE OPEN TWO-WHEELED CARRIAGES at present in private use, are—1st, *the dog-cart;* 2nd, *the Dennet gig;* 3rd, *the Stanhope*; 4th, *the Tilbury;* 5th, *the Irish car* (inside and outside).

(*a*) THE DOG-CART is a mere wooden-box, more or less lightened out at the sides, and ornamented with cane-work or laths. This is usually supported on grasshopper springs, with lancewood shafts to take off the trotting motion of the horse. The seats are four, back to back; and the body is so arranged, that when one or two only are riding in front, it may be still balanced evenly upon the wheels—the alteration being effected either by shifting the seat in the body, or the whole body upon the carriage by means of slides. There is an immense variety of forms in use, called the Malvern, the Croydon, the Whitechapel, &c., but the latter is the only one possessing any very distinctive feature, depending on its resemblance to a light butcher's cart, which is very close indeed, the colour (usually black) being the only distinguishing mark from those daily ranged in close order at Newgate and Leadenhall markets.

(*b*) THE DENNET GIG may be of almost any form, with a body holding two only; but there must be a grasshopper side-spring connected to the body behind by a cross-spring. The shafts are attached to the body, and, as a consequence, the knee-motion is very unpleasant, unless it is provided against by a joint (called a fulcrum) at the splinter-bar, and a spring at the back of the shaft between it and the body. Such is Fuller's Dennet, patented about thirty-five years ago, and a very useful kind of gig. The shafts are usually lined with whalebone throughout their whole length, and with these advantages the knee-motion is almost entirely destroyed.

(*c*) THE STANHOPE is now the most common gig in London and its neighbourhood, having displaced the Dennet in great measure, each seeming to enjoy its turn in popular favour. In this gig the body resembles that of the Dennet, and the springs are the same, except that in front they have a cross-spring as well as behind. The shafts, however (see *fig.* 162), are directly attached to the axle-tree, and are of ash, plated with iron, so that they are quite rigid. (See also page 596.)

(*d*) THE TILBURY is a gig of a totally different construction; and, being suspended upon leather braces, its motion is much softer than that of the Stanhope or Dennet. There is no fixed boot, but a skeleton body (see *fig.* 163) is attached to a rigid shaft by means of a spring behind, raised from the hind-bar before a T-shaped stay (see *fig.* 163 A). The fore-spring is attached to the shaft by a brace, as is the case also with the hind-part of the carriage, but there the brace is inserted between the cross-spring fixed upon the stay, and the side-spring bolted to the under-side of the seat. This kind of gig has already been alluded to at page 596, and may therefore be now dismissed.

(*e*) THE IRISH CAR is a large and somewhat roomy box, placed upon grasshopper springs usually of the Dennet form, and with lancewood shafts, which often have a Fuller's fulcrum, in order to get rid of the knee-motion. The body is either of what is called the inside or the outside car form, that is to say, the passengers either sit with their knees inside and approaching each other, as in an omnibus, or they sit back to back, with a moveable platform turning down over the wheels.

(*f*) All of these open gigs, &c., are capable of being sufficiently protected from

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cumstance, and is hence almost entirely discarded at present.

(*d*) The Nottingham and Leicester Cottage Carts are very useful carriages, nearly on the same construction, and both capable of being used as open or closed carriages at discretion, but only in their hinder seats. In the Leicester cart, there is an attempt to improve upon the lock by making the joint between the two bodies so that the driver always follows his horse; and the shafts are attached directly to the front body, and not to the lower fore-carriage; indeed, this is done away with altogether. This allows of the introduction of springs, with braces, by which the ease is greatly increased; but not having seen one in action I cannot speak as to the efficiency of the improvement. A high fore-wheel is however obtained, which is a great advantage in point of draught. In the Nottingham dog-cart, as made by Carey, the improvement consists only in the peculiar mode of opening out the seat (common to it and the Leicester cart), by which it is either an ordinary outside seat, on a level with that of the driver, as shown at *fig.* 160, or else opened and adapted for bad weather, as in *fig.* 171. When thus opened, the passenger sits on the bed of the boot, and its outer casing is raised on a hinge at its back so as to make a perfect head, with German lights and apron complete, if desired; but as the wind and rain do not beat in the direction in which a carriage is going, there is little necessity for these defences. Either of these carriages makes a very useful country vehicle suited to all purposes, and even sufficiently protected for ladies' evening use; so that it may be applied to more purposes than any other carriage, and is very light and cheap in construction. The outer case, which lifts up, being framed, with a glass introduced, corresponding in size and shape to the cane or lath-work on the fixed side, there is no difference made in appearance when it is closed, as the transparent glass admits the lath to view.

(*e*) The Sociable has two seats opposite each other, which are constructed of the most simple form, and in a very light manner. It is a carriage much used at present, being light and convenient; but it cannot be closed so completely as the britschka and barouche.

(*f*) The Barouche and Britschka are two carriages on the same principle, and differing only in the lines on which they are constructed, and in the situation of the coach-box. In the barouche, the body has a curved form, and the box is raised in front considerably above the level of the body, (see *fig.* 173), while in the britschka the lower line of the body, including the rocker, is quite straight, and the driving-seat is on a level with those of the inside, with a solid boot, continuous with the rocker, and so constructed, that it forms either a travelling boot entirely shutting up like the back of a dog-cart, or else with a foot-board also on that construction, and a light low driving-seat on the top. This carriage is now, however, almost entirely superseded by the barouche, see *fig.* 173, which is an elegant carriage in form, easy in motion, and only disadvantageous from its weight and cost. Both are mounted on C-springs, with under-springs also of the elliptic or grasshopper form; they have a perch, and the bodies are protected by solid knee-boots and German lights, so that two people may be enclosed quite securely from the weather; but when used by four, the protection is only partial, inasmuch as the solid knee-boot is then raised at the back of those riding in the front-seat. Sometimes, however, mahogany framed lights are fixed at the front and sides so as completely to enclose the carriage, a leather buttoning on the top to complete, with the head, that part of the covering. But this fixture soon becomes loose, letting the water in if often used, and, as a consequence, the plan has almost gone out of favour.

1858. Close Carriages consist of—1st, the carriage holding two only inside, as the *Brougham* and *chariot;* 2nd, those holding four, as the *Clarence* and *coach*, besides numerous modifications of these, such as the *diorapha*, *landau* and *landaulet*.

(*a*) The Brougham may be considered as a light and small chariot, adapted for one large horse, or two small ones. It differs from the chariot, however, in having the driving-box attached to the body by a solid boot, whereas the true chariot has iron stays only, as a support to the box; or sometimes it is directly attached to the fore carriage, as in the Salisbury boot. In the Brougham the back-quarter of the body is cut away, in order to admit of lowering it upon the axles and springs; and this is really the chief distinguishing feature of this carriage from that known as the chariot. The springs are very various; but in all cases, except where the perch is used, the elliptic spring is introduced in the front, while behind, the elliptic, or sometimes a semi-elliptic, with a cross-spring added; or in others, again, a modification of the C-spring, as described at page 593. In the Brougham with a perch, the C-spring is introduced before as well as behind, but of small size, and yet the tempering is so well managed that the spring plays enough to afford great ease to those inside. The object of the return to the C-spring is to avoid the noise made in the interior by the metal fixings, which is cut off by the leather braces. Hence, even with the C-springs behind, where the elliptic are retained before, this humming is not removed, though it is partially so. In consequence of the shape of the front boot, the fore-wheel may be made very large, especially with an eccentric lock, which is generally necessary for this purpose (see page 527). Sometimes the Brougham is enlarged so as to hold four, but still retaining the same shape in its side, the increased space being obtained by rounding the front lights, and carrying them into the boot. This adds a little to the weight, but not more than 1 cwt., or hardly so much.

(*b*) **The Chariot** has been already almost fully described under the head of the Brougham, from which its points of difference have been shown at (*a*). These are the round side, the perch, and C-springs (which, however, are sometimes used in the Brougham), the dash-iron, the coach-box, supported on iron stays, and the *hammer-cloth*, which is never used on the Brougham. It is also much more roomy inside, and is a most delightful carriage either for winter or summer use, as it equally protects its inmates from the sun and rain, while the glasses are so large as to admit air enough to cool the interior in any weather. The weight of this carriage, however, is a serious objection. The chariot for travelling is furnished with an imperial at the top, which holds an immense quantity of luggage; also with a cap-case on the dash-iron, and fitted boxes to slip into the several seats.

(*c*) **The Clarence**, a coach with elliptic springs, has been the favourite family carriage of late years, both in town and country. It is tolerably roomy and very light; but the noise inside is nearly as disagreeable as in the Brougham, for which reason it is now somewhat out of favour. It cannot be made a very elegant vehicle, but by some builders it has been turned out in a superior style. The springs are similar to those of the Brougham last described, from which, in fact, it is scarcely to be distinguished by any clear definition, the flat side and angular front pillar being the chief points in which it differs from the round-fronted Brougham.

(*d*) **The Dioraphia** is a carriage, usually hung on elliptic or grasshopper springs, which may be used either as a Clarence or barouche. This is accomplished by lifting off a Clarence top and fixing on a leather-head and knee-boot; the object being to avoid the inefficient framed glasses described under the barouche. The extra cost is, however, considerable, inasmuch as there is great trouble in fitting the two parts together, the workmen being obliged to frame all in one, and then cut them apart with a fine saw, which is rather a delicate piece of work, as the cut is made in two steps to avoid the water getting in.

(*e*) **The Family Coach** has a full-sized body to hold four inside, mounted on C-springs, with a perch, and in many cases a hammercloth and rumble. The weight is enormous, but when intended for show, or for short distances in town, this is of little consequence to the large and powerful horses intended to draw it.

(*f*) **The Landau** (*fig.* 174), is a coach made to open by means of slats and leather covering them.

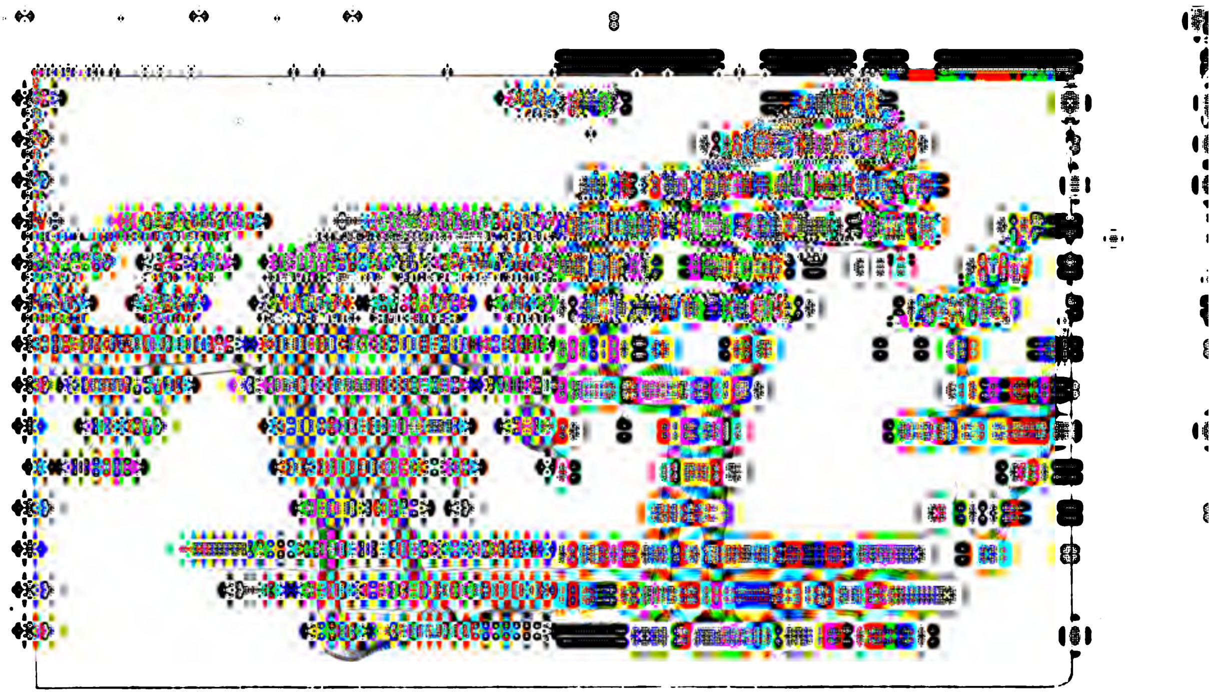
(*g*) **The Landaulet** is to the chariot what the landau is to the coach.

SECT. 3.—SINGLE AND DOUBLE HARNESS.

1859. **The Harness** intended for family use is either single or double, and beyond these distinctions varies only in quality and size.

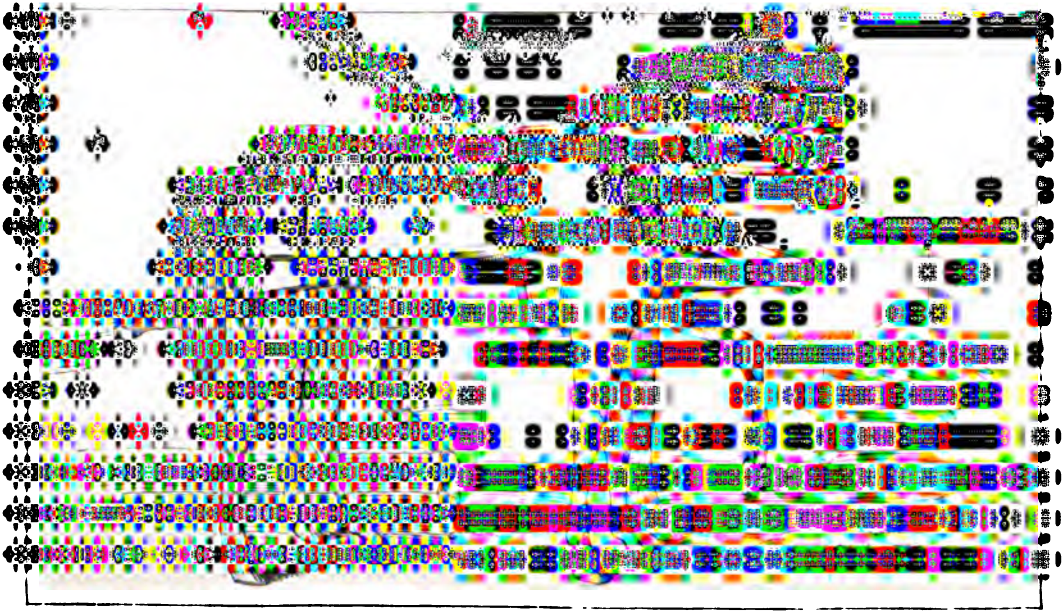
1860. **Single Harness** may be either strong and massive, as for heavy work in the Brougham or phaeton, or it may be very light when intended for the gig or dog-cart. In all cases, however, the parts are nearly the same in principle, and vary only in detail. Each complete set of harness consists of three parts—1st, the *drawing part;* 2nd, that for *holding up the shafts and backing the carriage;* and, 3rd, that for *guiding the horse.*

(*a*) **The Drawing Part** comprises the collar (*fig.* 175 A), which is an oval ring, padded so as to fit the horse's shoulders, or sometimes of a breast-strap (B), which is merely a broad-padded strap, crossing just over the shoulder-points. When a collar is used, two iron bars, called hames (C), are buckled on each side of it by a strap at top and bottom, called the hame-straps (D D). These pass through a flat eye at each end of the hame, and draw the two tight together. Towards the top of each hame is a ring called the hame-terret (E), intended to confine the rein in its place as it passes to the head; while a little below the middle is a metal arm, with an eye (F) in it, to which is attached the tug of the trace, a clip of iron stitched into a double piece of leather, which is attached to the buckle for the trace (G). This last is simply a long double-leather strap, attached at one end to the above buckle, and at the other by an eye to the drawing-bar of the gig, or sometimes the buckle is at the other end, and then the tug is stitched at once into the trace.



DETAILS OF SINGLE HARNESS

Pp. 602, 603.



DOUBLE HARNESS.

P. 603.

(*b*) THE SUPPORTING AND BACKING PART consists of the pad or saddle (H), somewhat similar in principle to the riding saddle, but much narrower and lighter. This has two rings for the reins, called the terrets (I), and a hook (J) for the bearing rein, all at the top. It is fastened to the horse by a belly-band (K), and at the back of it there is an eye for the crupper, which is a leather strap from it to the tail, round the root of which it passes, and thus holds the pad from pressing forwards. Through the middle of the pad passes a strong leather strap, called the back-band (L), which is attached to a buckle and strong loop on each side, called the shaft tug (M), by which the shaft is supported, and also kept back from pressing upon the horse's quarters, in which latter office it is sometimes assisted by a leather strap passing round these parts, and buckled on each side, either to the shaft or to its tug, and called the breechen (N); a kicking strap is sometimes substituted for the common breechen, or added to it, as shown at (O).

(*c*) THE PART FOR GUIDING THE HORSE consists of the bridle and the reins, the former being made up of two cheek-pieces and winkers (P and Q), a throat-lash (R), a nose-band (S), a face-strap (T), a front-piece (U), and a head-piece (V). The cheek-pieces are buckled to the bit, which is generally a strong curb, but sometimes only a double-ringed snaffle, now very commonly used in driving. The reins (W) are merely long and narrow strips of leather passing from the bit through the hame and pad-terrets to the driver's hand. Bearing-reins are additional reins attached to bridoon bits, and passing through ear-rings on or near the throat-lash to the hook on the pad. They are, however, now seldom used in single harness; but are shown in the annexed plan. Where the bearing-rein is not used, a long ear-ring is now sometimes suspended from the head of the bridle, through which the driving-rein passes, and by which the horse is prevented from getting the rein under the point of the shaft, an accident which is very annoying to those who leave their horses standing about with their servants.

1861. PHAETON AND CHARIOT HARNESS are both made on the same principle, differing only in lightness both of leather and ornament, the former being altogether much less heavy than the latter. Double harness consists, like single harness, of three essential parts; but as there is no shaft to be supported, the pad is much lighter and more simple. The drawing part is similar to that already described, except that the lower eyes of the hames are permanently connected by an oval ring of metal, upon the lower part of which a ring freely travels, to which the pole-piece of the carriage is buckled, and by which it is backed. The trace-buckles, also, are opposite the pad, and supported from it by a light strap, called the trace-bearer. The traces themselves either end with an eye, or, with a full fold upon themselves, with an iron eye, called a roller, and intended to be used upon the roller-bolt of the splinter-bar. The PAD is very light, and has no back-band; sometimes a long breechen runs to the trace-buckle; but for light harness a mere supporting strap for the traces, called a hip-strap, is all that is used. The BRIDLE is nearly the same as for single harness, except that there are no ornaments on that side which is towards the pole. The REINS have, in addition to the single rein which is attached to the outside of each horse's bit, another called a coupling-rein, which has a buckle towards the driver running upon the driving-rein, so that it may be taken up or let out at pleasure, according to the mouth of the horse, and his tendency to do more or less work than his share. These several points of difference are shown at *fig.* 176, in which a set of double harness, suited to a light chariot, is shown. The traces here are made to slip on roller-bolts, instead of having eyes as for single harness.

SECT. 4.—COST PRICE OF CARRIAGES AND HARNESS.

1862. CARRIAGES are variously priced by London and country builders, and also by different firms in both situations. The two extremes may, however, be comprised in the following list, omitting all extravagant outlay:—

	£		£
Town-made coach or landau	250	to	300
Ditto chariot	250	,,	300
Dioropha	230	,,	260
Clarence	180	,,	200
Round-fronted Brougham ...	120	,,	140
Single Brougham	70	,,	120
Britschka or barouche... ...	180	,,	220
Sociable	100	,,	140
Nottingham or Leicester four-wheeled dog-cart ...	65	,,	80
Phaetons (various)	50	,,	120
Mail phaeton	120	,,	140
Stanhope phaeton	50	,,	80
Cabriolet	90	,,	110
Tilbury	50	,,	60
Stanhope	50	,,	60
Dennet	40	,,	50
Dog-cart	18	,,	60
Pony phaeton	20	,,	50
Basket carriage	10	,,	40
Double-chariot harness ...	20	,,	40
Single harness	8	,,	12
Pony harness	5	,,	8

Sect. 5.—Comparative Cost of keeping Jobbing Horses and Carriages.

1863. It is rather difficult to compare these two items, because so much in this department depends upon the style of carriage which is adopted, and the way in which it is to be turned out. A good servant who knows his business will always command a high price; and in the same way in jobbing, the job-master will always charge much more for any turn-out which is new, or nearly so, with showy yet useful horses, than he would do for the same kind furnished with *screws* of horses and with the paint, &c., considerably the worse for wear. If, however, the master does not understand what he is about, he will do better to hire on job what he wants, by which plan he will, at all events, know the outside of his expenditure; while, if he finds his own horses, he will be constantly liable to demands upon his purse and temper. On the other hand, a master who really knows by experience what he is about, will keep his carriage for little more than half what he can job it for, that is, if he uses it regularly, and would job it on that understanding. The following calculation may serve to show this accurately enough for our present purpose:—

(*a*) Lowest Cost of Keeping a Brougham and Pair in London.

Keep of horses per annum	£52
Rent of stables and servant's room ...	30
Cost of carriage, including repairs, and one-sixth of prime cost	30
Wages	45
Harness, brushes, combs, &c....	10
Shoeing, and for veterinary surgeon's bill	10
	£177

The taxes would be the same in each case.

(*b*) The Charge for Jobbing a Carriage of the above description, including all expenses of coachman, &c., will be from £250 to £350. It may be done for less, but not in good style; but this is a matter of indifference to some people.

(*c*) The smaller the number of horses kept the better it will answer to job them, as the cost of one man's time must be allowed just the same as for two or three. I have, therefore, taken a pair as an average.

(*d*) Carriages may also be jobbed without horses, which is a plan adopted by those who use them for many hours a-day, as in the case of professional men. This plan, however, does not answer for others, who often leave their carriage in the coach-house for a week at a time, for which they would pay just the same as if constantly in use. The ordinary charges are as follows:—

Cost of Job Carriage.

	£		£
Annual hire of Brougham or Clarence	30	to	45
Ditto, phaeton (full size) ...	25	„	35
Ditto, small	20	„	30
Gig	18	„	25
Pony carriage	15	„	20

This usually includes all accidents and repairs arising from the fault of the coachmaker, but not those incurred from the carelessness of the coachman, or the fault of the horses. The oiling of the wheels is also generally done by the coachmaker.

Sect. 6.—Second-hand Carriages.

1864. Carriages may be Bought Second-hand almost all over Great Britain, at least in every town of any size. Sometimes their purchase causes a great saving in the cost—that is to say, if they were originally well-built, and have not since been ill-used, or thoroughly worn out. A body made by a good builder will last for an indefinite time, and so will a great part of the carriage, including the springs and axles. The wheels must always be calculated on as soon requiring renewal, though even these in private work, if the tire is attended to and renewed in good time, will last for several years. A wheel-tire wears out, on the average, after about 300 or 400 days' use, the day comprising, we will say, fifteen miles. This period may be extended or diminished, according to the original thickness of the tire, and the material of which the roads are made—granite and flint wearing down the iron much quicker than gravel. The great difficulty in selecting a second-hand carriage lies in the ease with which an unprincipled person can paint, varnish, and line any old rattle-trap, until it looks as good as new, and this lasts as long as the carriage is not exposed to the dry air and sun, and is kept quiet. But after a journey or two the putty drops out of the joints, the doors refuse to open, and very often the wheels come almost to pieces. If, therefore, an unskilled purchaser is determined to try his chance, let him select a carriage *in its first paint*, even if that is rather shabby. By looking at the worn edges of the paint, the under-coat, if painted twice, will be visible beneath the present external layer, and in that case some extra caution should be exercised. But if a carriage is offered for sale with its tires, paint, and lining all partially and equally worn; and if the joints of the body, as shown at the panels and their edges, are sound, and the wood has not shrunk; if also the wheels show no indication of starting at their joints, it is fair to presume that the speculation may be ventured upon. The purchaser must always remember, however, that the thorough repairing of a carriage, including its painting, varnishing, and lining, as well as leathering, in many cases, will cost half as much as a new carriage, or nearly so, and indeed sometimes more than that sum. He must, if the purchase is to be an economical one, be contented for a year or two with the present paint and lining, adding only a coat of varnish, which is a great preservative as well as beautifier, and costs comparatively little. Even, however, with these precautions the purchaser will be liable to be taken in, as, though the indications mentioned are apparently plain, they require some little practice to detect them. In fact, coachmakers themselves are often deceived in second-hand purchases, so that it is absurd to suppose that less experienced persons will go scot-free. Still the saving is so great, that it is worth the risk, and especially when some knowledge of the previous history of the carriage can be obtained.

BOOK XI.

SOCIAL DUTIES OF HEADS OF FAMILIES.

CHAP. I.—HOME DUTIES.

SECT. I.—PLAN OF HOUSEKEEPING.

1865. **CALCULATION OF ANNUAL EXPENDITURE.**—In order to manage the details of a household in an economical manner, it is, before all things, necessary that the manager shall know what sum may be spent in each department, as well as the total expenditure which may safely and properly be incurred. When this is once settled, the next thing is to cut down the expenses of each department to the proper figure in proportion to the whole expenditure, and here there is room for considerable variation, according to the extent of the income, and the numbers of the family to be provided for. Generally speaking, about one-half of a moderate income must be set apart for the supplies of the house (and stables, if any), the other moiety to be devoted as follows:—one-eighth of the whole to rent and taxes—one-eighth to clothing—one-eighth to illness, parties, and other amusements—and the remaining eighth to wages and incidental expenses, including those charities over and above the superfluities of the household. This rule applies tolerably closely to those who spend £500 or £1000 a-year, but with those who have only the smaller sums of £250 and £100, the proportion for wages, amusements, and incidental expenses must be reduced, and the subtracted sums added to those for housekeeping. On this scale, therefore, according to the several sums already specified as treated of in this book, there will be the following division of income under the several heads attached.

TABLE OF EXPENDITURE.

	ANNUAL INCOME.			
	No. 1, £1000.	No. 2, £500.	No. 3, £250.	No. 4, £100.
Housekeeping:—	£ s.	£ s.	£ s.	£ s.
Butcher's meat and bacon	75 0	40 0	30 0	18 0
Fish and poultry ...	30 0	10 0	7 0	—
Bread	20 0	16 0	14 0	10 0
Milk, butter, and cheese	20 0	18 0	16 0	8 0
Grocery	30 0	20 0	18 0	8 0
Italian goods	8 0	5 0	3 0	—
Greengrocery	20 0	12 0	10 0	6 0
Beer	20 0	12 0	10 0	5 0
Wine and spirits ...	50 0	15 0	8 0	1 0
Coals	25 0	15 0	12 0	5 0
Chandlery	12 0	7 0	7 0	2 0
Washing	40 0	30 0	15 0	2 0
	350 0	200 0	150 0	65 0
Carriages and horses ...	150 0	50 0	—	—
Rent and taxes	125 0	62 10	31 5	12 10
Clothing	125 0	62 10	31 5	12 10
Wages & incidental expenses	125 0	62 10	18 15	5 0
Illness and amusements	125 0	62 10	18 15	5 0
	£1000 0	£500 0	£250 0	£100 0

This calculation is made on the supposition, that in each case there is a family of four children, together with the parents and the servants allotted, at page 219, to the several incomes. The rule given above, upon which it has been framed, has been strictly carried out in Nos. 1 and 2, while it has been modified in Nos. 3 and 4 by adding to "Housekeeping" £25 and £15 respectively, deducting the amounts from the two lowest items in the table. It will also be seen, in analyzing the details for housekeeping, that the allowances for each article have been varied according to the necessities of the case. Thus, the charge for bread in No. 1 does not bear the same ratio to Nos. 2, 3, and 4 that £850 bear to £250, £200, and £65, respectively, because this article is required in a proportionably larger amount in the poorer man's family, than it is in that of the man with an expenditure of £1000 a year, and the same remark will apply to many other items, though not to the same extent as in the "staff of life."

1866. THE CALCULATION OF THE WEEKLY EXPENSES is readily made from the above table of *annual* expenditure by dividing each item by 52. Of course, every manager will find he (or she) must vary the items to suit particular circumstances, inasmuch as in many situations milk is dearer in proportion than bread, while it is an invariable rule, that greengrocery in towns is double the price which it bears in the country; so that the calculation must only be received as an average one, and as serving to show the mode of arriving at the several details. But when the manager has carefully set about her task, and, after putting down the whole sum to be spent, and dividing it into items, has proceeded to consider whether the fifty-second part of each of these will serve her for a week, she begins to see her way through her task, and at once is able to accommodate herself to circumstances, and to raise one, and lower another, accordingly. The great thing is, *to make the calculation on paper, and when that is done, to determine to adhere to it somehow or other.* But without this weekly estimate, it is scarcely possible to check the expenditure, until it has gone so far as to trench severely upon the whole sum to be laid out in the year.

1867. When the manager has proceeded thus far, the next thing is to lay in a stock for the week, or in some articles for a longer period, including in the latter those which improve by keeping, or which may be bought to advantage in larger quantities than are required for the seven days. But until she has gained some experience in housekeeping, it is perhaps better in all cases either to buy a week's consumption, or that for a month, or a quarter, or half a year, so that it may be divided into distinct portions, one of which may be easily set apart for each week. This is not possible with all the articles used in housekeeping, nor can the rule be as strictly carried out in the affairs of the house as it can in a large mercantile establishment, because, in order to do this, stock must be taken at the end of each week, which would be a difficult and tedious affair. Besides which some articles are not used invariably in the same quantities in each week, such as poultry and fish; but these may be considered as exceptions to the rule, and treated accordingly. Coals and candles, again, are in much greater demand in the winter than in the summer, so that usually in the latter season one-half or one-third at least may be subtracted from the weekly sum, and put by to be afterwards added to that demanded in the winter months. The remedy, however, is simple enough, for though the expenses of each single week are not to be taken as the exact fifty-second part of the whole annual cost, yet after a time it will be found that one week will correct another, and that the cost of thirteen will give as nearly as may be the fourth part of the year's expenses, and by proceeding further on the same principle, the outlay made in four weeks will show, though not so accurately, the thirteenth part of the annual expenditure.

SECT. 2.—PROVISIONING FOR THE WEEK, AND ORDINARY BILLS OF FARE.

1868. In this section that part relating to the provisioning for the week is affected by so many causes, that no rule can possibly apply. Thus, at a distance from market, many articles are of necessity purchased at intervals which would be bought as they are wanted, where the proximity to good shops admitted of such a convenient mode. In the country it is often impossible to procure butcher's meat, or even butter, except on market-days; so that even in the sultry weather of midsummer, a stock sufficient for the interval must either be laid in at those times or they must be altogether dispensed with. It must not, therefore, be assumed that, because the week's provisions are here indicated as purchased on the Saturday, the caterer should always do so on that day, but that she should comply with the rule in principle, and should only depart from it when some valid reason exists, as a matter of course substituting any other day of the week which may be the local market-day. The limits of this book will necessarily prevent a statement of the actual details in each separate income, and therefore what is given can only be received as a specimen of the plan generally to be adopted, which must be modified according to the circumstances already alluded to. In the higher incomes, also, there is less necessity for extreme care and anxiety, because the amounts set apart for them are on a more liberal scale, and they will therefore be omitted in the calculation, the attention being confined to that most difficult problem comprised in the catering for a family upon the confined scales of expenses given under the third and fourth columns.

(*a*) A WEEK'S CATERING FOR AN EXPENDITURE ON HOUSEKEEPING OF £150 A-YEAR. By the adoption of the above plan, and by subdividing the amounts given in the table of expenditure, the result is, that the mistress will have 18 lb. of meat, 2s. worth of fish, 30 lb. of bread, 3 lb. of flour, 6s. worth of milk, butter, and cheese, 7s. worth of grocery, 3s. 10d. worth each of greengrocery and beer, and 5s. 9d. to spend in materials and female help in washing and ironing. She therefore goes to market and buys, we will say, a leg of mutton and a piece of the buttock of beef, together weighing 18 lb., which, allowing for one day's dinner on fish, will be 3 lb. per day on the whole. The bread will allow of three-quarters of a pound per head per day, with 2 lb. of flour for puddings during the week; and if it is made at home, there will be an extra quantity, or a saving to the extent of about 6d. The breakfast must be confined to oatmeal-porridge, or flour-milk, alternately with bread, and butter or dripping for the children, and also tea and sugar; for which last item, 6d. may be allowed for breakfast and tea, and 6d. for the sugar, rice, raisins, &c., used at dinner for puddings. About 6½d. is allowed per day for greengrocery and beer, respectively, which is quite enough for these items, so that the chief difficulty lies in the management of the meat, which must be eked out with some care, and made to go as far as possible. Three pounds are allowed per day, or, in other words, the leg of mutton and piece of beef must each last three days, which, with a family of four children, is not a very easy task. Many people do this by filling their stomachs with heavy pudding in the first place; but this, I believe, to be wrong in point of health and economy. Whatever is considered a treat will be eaten by children after they have already had enough of other articles of food. The better plan is to tell them that so much will be given of meat and no more, and then let them have their pudding afterwards. In this way the following dinners may be arranged:—

Sunday.—Leg of mutton; roast potatoes and greens; Yorkshire pudding.

Monday.—Cold mutton; potatoes and salad; rice pudding.

Tuesday.—Hashed mutton; fried potatoes; cauliflower; apple dumplings.

Wednesday.—Boiled beef; carrots and potatoes; suet pudding.

Thursday.—Pea-soup made from the mutton bones and beef boilings; fish and potatoes; currant dumplings.

Friday.—Cold boiled beef; potatoes and salad; bread-and-butter pudding, made with fruit preserve.

Saturday.—Bubble and squeak; potatoes; yeast dumplings.

In this plain way it is undoubtedly possible to keep a family of four children in good health on the above sum; and, what is more, there is not a particle of waste in the method of cookery. It is quite absurd to suppose that more can be done with the materials in point of economy. They may, no doubt, be made into more palatable dishes, but, as in the case of healthy children, due justice will generally be done to the above fare, it is useless to make the attempt on their account alone. While at the same time, if parents have this limited income, and have also a family of the number described above to keep, they must content themselves with this plain fare, or else they must pinch the stomachs of their children, in order to pamper their own.

(*b*) A WEEK'S CATERING FOR AN EXPENDITURE OF £65 PER ANNUM ON HOUSEKEEPING.—The manager has here a much more difficult task to perform, as she has to support the same family upon a smaller allowance of the most expensive articles, and cannot, therefore, afford butcher's meat every day. She will have the following materials to go to work upon—viz., about 11 lb. of meat or bacon, 20 lb. of bread, and 3 lb. of flour, 3s. worth of milk, butter, and cheese, 3s. worth of grocery, 2s. worth of greengrocery, 1s. 10d. for beer, and 9d. a week for washing materials, the labour for which she must find herself. All these contracted items will, therefore, demand great care, as the quantities furnished are scarcely sufficient for the wants of nature. Unless, by good fortune, there is a garden to supply potatoes, or they can be purchased at a low rate, it is impossible to effect a full diet on this scale, as three pecks of potatoes per week are the utmost which can be obtained for the money, on the average, throughout England. This will allow nearly half a peck a day, or say 6 lb., which gives one pound of potatoes per head for dinner, with nearly half a pound of bread each per day for breakfast and tea, to be eaten with one quarter of a pound of salt butter among the family, divided between the morning and evening meal. One quart of milk will also be allowed, but no cheese, as I believe it to be an extravagant article of food. The next thing therefore to consider is as to the dinners, which may be as follows:—

Sunday.—Sheep's head roasted (see page 453), with chopped liver, and roast potatoes.

Monday.—Remainder of sheep's pluck fried, with dish of fried potatoes.

Tuesday.—Half a pound of bacon, fried with cabbage, and eaten with boiled potatoes; suet pudding.

Wednesday.—Bouilli (page 473, *h*); cabbage and potatoes.

Thursday.—Pot-au-feu (page 473, *h*); potatoes, and yeast dumplings.

Friday.—Two pounds of beef stewed with carrots, or potatoes as Irish stew.

Saturday.—Pea-soup, made without meat, or from part of pot-au-feu; fried potatoes and suet pudding.

These remarks might be indefinitely extended, but the natural intelligence of every individual must be exercised in arranging different kinds of cheap food so as to suit the ever-varying circumstances connected with the locality; much that would be useful to the man with only £65 a-year to spend in this way, may be found under Cookery for the Poor (page 535), if he is not too proud to make use of it; but the prevailing error in this country is, that the man who is cramped in his means will not make up his mind to bend his diet low enough in materials to suit his purse. We are all too apt to try and imitate the manners of our superiors just above us, and in this way much misery and inconvenience is occasioned which might be avoided by a timely submission to our lot.

(*c*) WHEN A SMALLER FAMILY than the above requires a very economical fare, the case is still more difficult, because less variety can be obtained from those joints which are well known to be the only really economical ones. Nevertheless, a good deal may be done by management, and even in the case of a leg of mutton, the dinners for a whole week may be obtained from it without having any two exactly alike, and without extra cost in any way. The following is the method proposed, which may often be useful to a married couple without children or servant, or to two sisters living by themselves.

1st Day.—Cut some steaks off the large end and broil them.

2nd Day.—Cut off a small knuckle and boil it, to be served with caper or nasturtium sauce.

3rd Day.—Cut some cutlets off the side next the knuckle, and fry with egg and bread crumbs.

4th Day.—Bone and stuff the fillet, which is to be roasted.

5th Day.—Hash part of the remainder.

6th Day.—Eat part cold, with salad.

7th Day.—Mince the remainder, and cover with bread crumbs. (See par. 1686).

(*d*) A sirloin of beef may be treated nearly in the same way, but does not admit of quite so much variety. Thus—

1st Day.—Cut off the thin end, and stew with peas or carrots and potatoes.

2nd Day.—Cut a thin steak off one side, and broil.

3rd Day.—Roast.

4th Day.—Hash part of remains.

5th Day.—Eat part cold.

6th Day.—Mince part with carrots (see page 492).

1869. THE FOLLOWING BILLS OF FARE are arranged to suit an expenditure of £1000 a year, on the calculation that the materials of each dinner will cost about 8s., which is the sum allowed in the table at page 606, exclusive of beer and wine.

BILLS OF FARE FOR £1000 A YEAR.

JANUARY.

(*a*) Pea-soup.
Remove—Boiled rabbit smothered in onions.
Mashed potatoes.
Stewed celery.
Roast leg of mutton.

—

Bread-and-butter pudding.
Mince pies.
Stewed pears.
Brace of partridges.

(*b*) Minced mutton, browned,
Fried potatoes, garnished with plain boiled potatoes.
Brocoli.
Cod's head and shoulders.
Remove—Sirloin of beef.

—

Leamington pudding.
Glasses of custard.
Preserved fruit in glasses.
Hot apple tart.

FEBRUARY.

(*c*) Boiled turkey.
Mashed potatoes.
Jerusalem artichokes.
Cold roast beef.

—

Semolina pudding.
Arrowroot blancmange.
Stewed apples.
Maccaroni.

(d) Cod-fish, fricasseed, with wall of potatoes.
Potatoes. Sea-kale.
Roast griskin of pork.
—
Rolly-polly pudding, baked or boiled.
Fruit tart.

MARCH.

(e) French soup.
Remove—Veal cutlets, garnished with bacon.
Brussels sprouts, Potatoes.
Roast loin of mutton.
—
Apple soufflé pudding.
Open tart.

(f) Boiled beef, garnished with carrots and parsnips.
Ham garnished with greens. Potatoes.
Roast fowls, garnished with sausages.
—
Custard pudding.
Remnant of open tart. Stewed pears.
Boiled apple-dumplings.

APRIL.

(g) Hashed pork.
Potato balls. Mashed Jerusalem artichokes.
Mutton en masquerade.
—
Lemon dumplings.
Pancakes.

(h) Boiled leg of mutton.
Potatoes. Brocoli.
Cutlets of soles.
—
Prussia puffs.
Fruit tart.

MAY.

(i) Onion soup.
Potatoes. Asparagus.
Stewed breast of veal.
—
Ground-rice pudding.
Rhubarb tart.

(j) Eggs and spinach.
Mashed turnips. Potatoes.
Stewed beef.
—
Custard pudding.
Creamed rice.
Orange fritters.

JUNE.

(k) Mutton cutlets.
Potatoes. Asparagus.
Roast fillet of veal.
—
Rhubarb pudding.
Maccaroni, with cheese grated over it.

(l) Turbot.
Potatoes. Spinach.
Quarter of lamb.
—
Bread pudding.
Custards in glasses. Cheese-cakes.
Gooseberry tart.

JULY.

(m) Boiled lamb.
Young potatoes. Peas.
Roast ducks.
—
Ground-rice pudding.
Red-currant tart.

(n) Hashed duck.
Young potatoes. Stewed French beans.
Turbot.
—
Cabinet pudding.
Jelly.
Open tart.

August.

(o) Chicken pie.
Potatoes. Stewed cucumbers.
Bubble and squeak.

—

Maccaroni pudding.

Black-currant tart.

(p) Hodge-podge.
Potatoes. Stewed peas.
Lamb cutlets.

—

Strawberry soufflé.

Stewed currants.

September.

(q) Brace of grouse.
Potatoes. Vegetable marrow.
Roast leg of mutton.

—

Oxford puddings.

Whipped cream.

Plum tart.

(r) Boiled bacon.
Potatoes. Broad beans.
Beef-steak pie.

—

Friar's omelet.

Apple charlotte.

October.

(s) Pea-soup.
Remove—Hashed mutton.
Potatoes. French beans.
Ribs of beef.

—

Bread-and-butter pudding.
Tartlets. Stewed apples.
Brace of partridges.

(t) Boiled chicken.
Savoury rice. Mashed potatoes.
Stewed beef.

—

Sponge-cake puddings.
Custard.
Apple tarts.

November.

(u) Rabbit curry.
Potatoes. Jerusalem artichokes.
Roast sparerib of pork.

—

Baked hasty-pudding.

Maccaroni and cheese.

(v) Minced mutton.
Peas-pudding. Potatoes.
Boiled pork.

—

Lemon suet pudding.

Potato fritters.

December.

(w) Wild ducks.
Potatoes. Stewed Portugal onions.
Roast leg of mutton.

—

Swiss pudding.

Mince pies.

(x) Cod's head and shoulders.
Potatoes. Mashed turnips.
Sirloin of beef.

—

Plum pudding.

Apple tart.

1870. The annexed Bills of Fare are suited to an expenditure of £500 a-year, in which, on the calculation made in the table given at page 606, 4s. 6d. per day will be about the sum allotted for the dinners.

Bills of Fare for £500 a Year.

January.

(a) Yorkshire pudding.
Potatoes. Jerusalem artichokes, mashed
Leg of mutton.

—

Ground rice pudding.

(b) Minced mutton.
Brussels sprouts. Mashed potatoes.
Stewed beef-steaks.

—

Remnant of pudding.

Hot apple tart.

February.

(*c*) Soles.
Potatoes. Parsnips.
Irish stew.

Poor Knights' pudding.

Tartlets.

(*d*) Carrot soup.
Greens. Mashed potatoes, garnished with browned ditto.
Roast pork.

Pancakes.

March.

(*e*) Carrots.
Mashed turnips. Potatoes.
Boiled beef.

Baked apple dumplings.

(*f*) Pea-soup.
Potatoes.
Bubble and squeak.

Rice and apple soufflé.

April.

(*g*) Ham or bacon.
Jerusalem artichokes. Mashed Potatoes.
Fillet of veal.

Rhubarb tart.

(*h*) Poached eggs and bacon.
Cabbage. Fried potatoes.
Veal cutlets.

Arrowroot pudding.

Cheese-cakes.

May.

(*i*) Hashed mutton.
Potatoes. Brocoli.
Roast leveret.

Baker tapioca-and-rhubarb pudding.

(*j*) Potatoes. Asparagus.
Quarter of lamb.

A baked jam roll pudding.

June.

(*k*) A brill.
Potato-balls. Cabbage.
Veal cutlets.

Milk custard in glasses.

A green apricot tart.

(*l*) Ham.
Young potatoes. Peas.
Boiled fillet of veal.

Gooseberry fool.

Arrowroot blancmange.

July.

(*m*) Soup Julienne.
Peas. Potatoes.
Lamb cutlets.

Remnant of some sweet.

Currant tart.

(*n*) A marsden.
Potatoes.
Hodge-podge.

Strawberries and cream.

Rice pudding.

August.

(*o*) Vegetable soup.
French beans.
Potatoe pie.

Custard pudding.

Stewed fruit.

(*p*) Shoulder of mutton.
Broad beans. Potatoes.
Bacon.

Raspberry and currant tart.

SEPTEMBER.

(q) Chicken pie.
Stewed French beans. Potatoes.
Cold roast beef.

Carrot pudding.

(r) Cod's head and shoulders.
Potatoes. Stewed mushrooms.
Beef stewed with peas.

Baked batter pudding with damsons.

OCTOBER.

(s) Brace of partridges.
Potatoes. Vegetable marrows.
Harico.

Potato fritters.

(t) Roast sirloin of beef.
Potatoes—Spinach.

Milk custard.
Damson pudding.

NOVEMBER.

(u) Goose.
Potatoes.

Swiss pudding.

(v) Peas-pudding.
Potatoes.
Boiled leg of pork.

Bread pudding.
Tartlets.

DECEMBER.

(w) Pig's puddings.
Potatoes. Jerusalem artichokes.
Hare.

Apple charlotte.
Rice pudding.

(x) Turkey.
Potatoes. Brocoli.
Chine.

Plum pudding.
Mince pies.

1871. IN SEARCHING FOR VARIETY, the housekeeper may receive some assistance from the following list of articles in season in the different months throughout the year; or for more minute information, see Book V.

SEASONAL TABLE.

JANUARY.

MEAT.—Beef, mutton, pork, and house-lamb.

POULTRY AND GAME.—Pheasants, partridges, hares, rabbits, woodcocks, snipes, wild fowl, turkeys, capons, pullets, fowls, chickens, pigeons, and larks.

FISH.—Carp, tench, perch, lampreys, eels, pike, cod, soles, flounders, plaice, turbot, skate, smelts, whitings, lobsters, crabs, crayfish, prawns, oysters.

VEGETABLES.—Cabbage, savoys, colewort, sprouts, brocoli, sea-kale, leeks, onions, beet, sorrel, endive, spinach, celery, garlick, potatoes, parsnips, turnips, shalots, lettuces, cresses, mustard, herbs of all sorts, dry or green.

FRUIT.—Apples, pears, nuts, walnuts, medlars, oranges, and grapes.

FEBRUARY AND MARCH.

MEAT AND FOWL as in January, with the addition of ducklings and chickens; which last are to be bought in London throughout the year, but are now very dear.

FISH.—As the last month; except that cod is not thought so good from February to July, but may generally be bought; and salmon is coming in, though very scarce.

VEGETABLES.—The same as the former months, with the addition of forced kidney-beans.

FRUIT.—Apples, pears, oranges, and forced strawberries.

APRIL, MAY, AND JUNE.

MEAT.—Beef, mutton, veal, lamb and venison in June.

POULTRY.—Pullets, fowls, chickens, ducklings, pigeons, rabbits, leverets.

FISH.—Carp, tench, sole, smelts, eels, trout, turbot, lobsters, chub, salmon, herrings, mackerel, crayfish, crabs, prawns, shrimps.

VEGETABLES.—As before. In May, early potatoes. In June, peas, radishes, kidney-beans, carrots, turnips, early cabbages, cauliflowers, asparagus, artichokes, and all sorts of salads forced.

Fruits.—In June, strawberries, cherries, melons, green apricots, currants, and gooseberries for tarts. In July, cherries, strawberries, pears, melons, gooseberries, currants, apricots, grapes, nectarines, and some peaches. But most of these are forced, and sold at a high price.

July, August, and September.

Meat, as before.

Poultry and Game.—Pullets, fowls, chickens, rabbits, pigeons, green geese, turkey poults, leverets. Two first months, plovers, wheat-ears; geese in September, and also partridges in that month, and grouse after August 12. Hares all through; quail and landrails.

Fish.—Cod, haddock, flounders, plaice, skate, thornback, mullets, salmon till the 25th September, pike, carp, eels, shell-fish—except oysters. Mackerel the first two months of the quarter, but not good in August.

Vegetables.—Of all sorts. Beans, peas, French-beans, &c. &c.

Fruit.—In July—Strawberries, gooseberries, pine-apples, plums (various), cherries, apricots, raspberries, melons, currants, damsons. In August and September, peaches, plums, figs, filberts, mulberries, cherries, apples, pears, nectarines, grapes. Latter months, pines, melons, strawberries. Medlars and quinces in the latter month. Morella cherries, damsons, and various plums.

October.

Meat as before, and doe venison.

Poultry and Game.—Fowls as in the last quarter. Pheasants from the 1st of October; partridges, grouse, larks, hares, dotterels. At the end of the month, wild-ducks, teal, snipes, widgeon.

Fish.—Dories, smelts, pike, perch, halibut, brill, carp, barbel, gudgeon, tench, shell-fish.

Vegetables. — As in January. French-beans, last crops of beans, &c.

Fruit. — Peaches, pears, figs, bullace, grapes, apples, medlars, damsons, filberts, walnuts, nuts, quinces, services.

November.

Meat. — Beef, mutton, veal, pork, doe venison.

Poultry and Game as in last month.

Fish as in last month.

Vegetables. — Carrots, turnips, parsnips, potatoes, onions, leeks, shalots, cabbage, savoys, colewort, spinach, cresses, endive, celery, lettuces, salad, herbs, pot-herbs.

Fruit.—Pears, apples, nuts, walnuts, bullace, chestnuts, medlars, grapes.

December.

Meat.—Beef, mutton, veal, house lamb, pork, and doe venison.

Poultry and Game. — Geese, turkeys, pullets, pigeons, capons, fowls, chickens, rabbits, hares, snipes, woodcocks, larks, pheasants, partridges, guinea-fowl, wild-ducks, teal, widgeon, dotterels, dun-birds, grouse and ptarmigan.

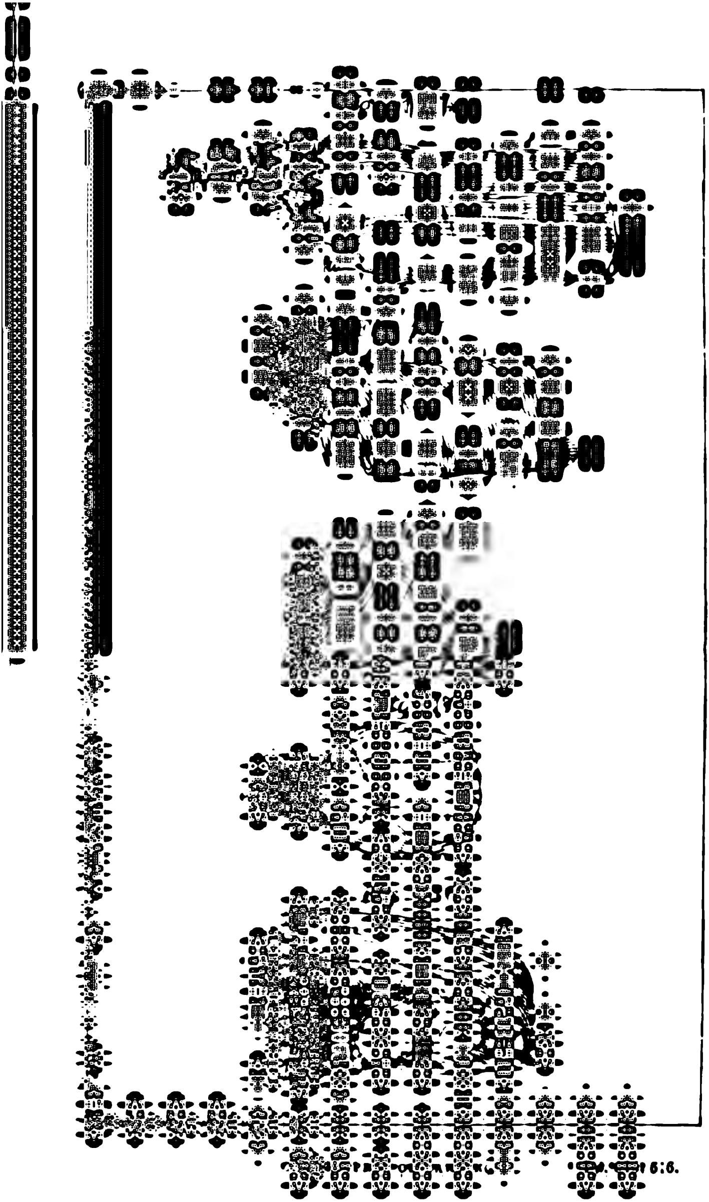
Fish.—Cod, turbot, halibut, soles, gurnets, carp, pike, gudgeons, eels, dories, shell-fish.

Vegetables.—As in the last month, and asparagus forced, &c.

Fruit as in the last month.

Sect. 3.—Principles of Carving.

1872. **The General Principles** upon which carving is, or ought to be, conducted are very plain, and the only real difficulty consists in the necessity for practice to enable the carver to hit the joints either between the several bones of a piece of mutton or veal, or in any of the various kinds of poultry or game. Each of these must, therefore, be separately considered. but with regard to butcher's meat, one rule may be laid down as almost, but not quite, invariable, and that is, always to cut across the fibres of the meat, and not in the same direction. This ensures a short grain, and avoids those long strings in the mouth, which are by no means pleasant. If, therefore, the carver will only examine into this point and ascertain the direction of the grain or fibres of the meat, he will at once be able to cross them with the knife, and gain the desired advantage. The exception alluded to is the under side of the sirloin of beef, which is always cut in the direction of its fibres, though I really do not see why, as it is much improved in flavour by cutting it in the same direction as the upper side, that is, parallel with the bones. This, however, is not a very easy task with a bad knife, as the meat is apt to slip from the bone. The next rule to be observed is to make the knife and fork assist each other—that is to say, the fork should steady the joint for the knife, or where the fork is used as the means of division in removing the leg of a fowl, the knife must take the office of steadying the body of the bird, and the same remark applies to the carving of a hare or rabbit, or any other kind of poultry or game; and, thirdly, it is very important, in an economical point of view, to cut all slices, either of meat, game, or poultry, completely down



to the bone, so as to leave no ragged portions behind.

1873. IN PARTIES of any size or pretensions, it is now the fashion for the butler to carve all the dishes on the side-table; but this requires a servant equal to the task, with assistants in proportion, and also a dining-room large enough to admit of a side-board devoted solely to this purpose. In small quiet parties, and in the home-circle, the carving will still be carried out by the master or mistress of the house, and therefore it is necessary to make some remarks on the subject in this place.

1874. THE CARVING KNIVES AND FORKS are made specially for each article; thus, for fish they are of silver or plated-ware, with a large massive blade for the knife, and the fork also large and massive, with five prongs, so as to raise a large flake of the flesh without breaking it. Again, for large joints, such as beef, mutton, or venison, a long steel blade is required, which should be made very sharp with the steel applied in the true butcher's mode; and in addition a two-pronged fork; and, lastly, for game, the handles are long, to give a good purchase in twisting off the leg, while the blade of the knife is small and pointed, so as to be easily insinuated between the small bones at the wing, the fork being also two-pronged.

1875. IN CARVING FISH, the following directions apply:—

(*a*) IN CARVING SALMON, it is only necessary to take care to avoid breaking the flakes unnecessarily by attempting to divide them at right angles with the long axis of the fish. There is a great difference in the flavour of the back, or thick part, and that of the thin part of the fish, and therefore most people like to be asked which they prefer. This being done, the knife is carried down to the bone longitudinally, and removes a thick slice of either or both, according to the choice.

(*b*) A COD'S HEAD AND SHOULDERS is a most troublesome dish to carve, because, if well boiled, it looks whole until touched, and then tumbles to pieces in the most trying way to the inexperienced carver. As in the salmon, so here, the thick and the thin parts are not equally prized by all, and should be served according to choice. There is, also, a part on the head behind the eye which is much relished, and called the cheek, together with many other tit-bits about the head. Close to the back-bone is the sound, the flavour of which is patronised by most people, though not by all; as is the case with the liver also; each of which should be divided into portions suited to the size of the party, and their respective wishes on the subject.

(*c*) TURBOT requires peculiar carving, because, unlike other fish, its skin and fins are thought a great delicacy. It is only necessary to carry the blade of the knife down to the bone along the middle, and then to make similar deep and clean cuts at right angles to this, each way to the fins, a portion of which should be separated and *kept* with each square of fish, so as to avoid that hacking of the fins into pieces afterwards which is by no means sightly. When this part is not approved of, it is very easy to leave the fin attached to the bones below.

(*d*) BRILL, SOLES, AND PLAICE are carved much in the way as turbot, when they are of any size; but small soles are completely divided into two or three by the knife, which requires a slight twist, in order to do this with ease. Many ladies with weak wrists have great difficulty in effecting this seemingly simple operation; but though strength will enable any bungler to do it, yet a little knack will make up for the deficiency in this ingredient, and place the delicate lady's hand on a level with that of the most powerful man. The exact method, however, can scarcely be described, and must be watched and imitated, in order to ensure its being caught by the learner. Some people prefer to remove the whole of the flesh in the same way as in carving turbot, but this only answers for large soles.

(*e*) MACKEREL are split at the tail, and the upper half raised at that part from the bones, after which the bone is removed from the lower half of the fish, and that in its turn is served either in one piece or divided into two, according to its size.

(*f*) Most other small fish are carved much in the same way, that is, either by serving them whole, or dividing them with the knife into sections, according to size.

(*g*) For the mode of serving lobsters, &c., see page 471.

1876. DIRECTIONS FOR CARVING JOINTS:—

(*a*) THE HAUNCH OF MUTTON OR VENISON is carved very differently by different people. The usual plan is to cut through the flesh between the leg and loin, and then to run the knife from this to the lower end of the loin, cutting parallel slices in that direction. A much better plan, however, consists in making these cuts in one sweep, carrying the knife directly from the outside of the leg to the end of the loin, and thus getting a beautiful long slice of lean with the fat at the end (see *fig.* 176 A B). There is, also, a delicious mine of kidney-fat in the loin of mutton *under* the flank, which is often too high in venison; but if fresh enough, is even more rich and palatable in that meat than in mutton.

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and gradually worked up to the other end; 2nd, it may be cut in the middle, and each side taken from until exhausted, taking care to carry the knife down to the bone in a perpendicular direction; or 3rd, a hole may be scooped out in the middle, and thin circular slices removed from around it. In any case the slices ought to be thin and regular, which requires some little practice; for the third method great art is demanded.

(*p*) A SUCKING PIG requires very little carving, as the knife may be carried through any of its bones with a very little force. It is usual to divide it into sections about two inches broad, and including about three ribs in the middle, and a part only of the fore and hind-quarters at each end.

(*q*) A CALF'S HEAD merely demands the careful use of the knife in cutting off longitudinal slices of the gelatinous skin, carrying the blade straight down to the bone.

1877. POULTRY AND GAME require all the art of the experienced carver to do justice to them, inasmuch as they may be made to look extremely inviting if nicely separated, or they may be hacked to pieces by the bad manager of the carving-knife. One of the chief advantages of the present fashionable method of serving a dinner consists in the avoidance of this mistake, which is alike annoying to the giver of a good dinner and to the guests. The mistress cannot always allot the task to a person who is skilful at this craft, and if the reverse takes place, she is annoyed at his bungling, for his sake as well as her own. As far as possible, the fork should only be inserted once, and not continually driven in, and then removed to try a fresh place. This constant stabbing disfigures the bird, and looks awkward and unsightly in the carver, besides which it is seldom or never necessary. The following special directions may assist the young carver, but nothing short of actual observation and trial will make him accomplished in the art.

(*a*) A ROAST OR BOILED TURKEY may be made to serve a great number of people, if carved with judgment, or it may be used so extravagantly as to be expended before half the guests have been served. A sharp knife should be passed clearly down to the bone, almost close to the wing, and then a thin slice is taken out from between this and the breast, continuing the same plan until the whole side is exhausted, after which the other side is served in the same way. A portion of the force-meat is also placed in each plate; and if there are sausages or balls, a part of each of them. When both sides of the breast are used up, and the party are not all served, the legs must be taken off by carrying the knife backward between them and the body, until it is stopped by the joint, when by means of the fork stuck in the leg it is severed from the body, the knife completing the removal by its edge. If possible, however, the carver should endeavour to avoid having recourse to the legs, and it is usually either a reproach upon the mistress for not procuring a sufficiently large bird, or upon his own powers of carving, if such an expedient is unavoidable. In dividing the leg into its two portions, the knife should be used against the inside of the joint, where it enters with much less difficulty than on the outside. After this, in a large bird, the meat is cut off in sections for serving.

(*b*) THE ROAST OR BOILED CHICKEN, when carved hot, is generally cut into separate joints, consisting of—1st, the wings; 2nd, the legs; 3rd, the merry-thought; 4th, the neck-bones; 5th, the breast; 6th, the back and its side-bones; 7th, the neck. But, excepting for family use, it is seldom customary to use more than the wings, merry-thought, and breast, or sometimes in addition the legs. The plan of proceeding is, to stick the fork into the breast firmly, then draw the knife steadily along the line between the leg and body, continuing it forward until it has separated a slice of the breast with the wing-bone. If the carver is dexterous, he hits the joint at once, and some can remove a wing as if there were no bone at all, the art consisting in guessing at the exact situation of the joint. As soon as the two wings are removed, the knife is carried down in front of the breast-bone, scooping out the merry-thought, and readily separating it from its bony attachments. If the legs are now to be removed, the fork is taken out of the breast, and by sticking the prongs in the leg, with the knife laid flat against the side, they are readily lifted out of the sockets, and torn as it were from the body. The neck-bones are now twisted off with the fork, after which the breast is removed whole by cutting through the ribs with the knife, and then a separation of the back-bone in the middle divides the remaining part of the body into the back and neck. The former of these may again have its side-bones easily removed with the knife, each containing a delicious morsel in a sort of spoon-shaped cavity, which is much prized by the gourmand.

(*c*) WHEN A COLD ROAST FOWL is to be served at a breakfast or supper party, it is often the custom to carve it up completely with a sharp knife, and then put the joints together again, keeping them in their places by means of white ribbon tied in bows. This is a very good expedient in such a case, as it prevents the exhibition of bad carving, and facilitates the rapid serving of the guests, which is essential to success in such matters.

(*d*) GEESE AND DUCKS are carved much on the same principle as the turkey and fowl, excepting that there is very little meat on the merry-thought, which is also more difficult to get off. In the goose the best parts will be found in the breast, which is, however, not so meaty as that of the turkey, and the slices are much more shallow. Ducks are cut in slices when large, or if small they are disjointed like fowls. If these are dressed with seasoning, it should not be distributed on the plates without ascertaining that it is agreeable to the tastes of the party to be served.

(*e*) THE PARTRIDGE is so small that it will scarcely admit of disjointing, and it is usual to separate it at once into the breast portion and the back and legs, which may readily be done without cutting, by inserting the fork in the former and raising it while depressing the latter. When this is done the knife may be carried longitudinally through the breast, so as to divide it into two equal portions, after which the back and legs may be halved in the same way. Some people, however, divide the partridge differently, by cutting off a leg and a wing together, and leaving a small breast, so as to make either three or five portions out of this bird.

(*f*) THE GROUSE is carved in the same way as the partridge.

(*g*) A PHEASANT may be sliced on the breast like a turkey, after which, if the party require it, the plan of carving similar to that practised on the roast fowl must be adopted.

(*h*) THE WOODCOCK is carved like the partridge, distributing it into four, or sometimes two portions only, and giving out the toast in the same way, equally to each plate; the thigh is usually considered the most delicate part of this bird.

(*i*) THE SNIPE is only large enough to divide into a breast, and back with the legs. The toast is the same as for the woodcock.

(*j*) PIGEONS, LARKS, FIELD-FARES, &c., are divided into two portions as described for the partridge.

(*k*) THE HARE is rather difficult to manage nicely, especially if it is an old one. When the carver has a strong wrist, the most advantageous way is to carry the knife along on each side the back-bone, all the way from the shoulder to the tail, and leaving a useless piece of back in the middle about half an inch wide, with a good fleshy fillet on each side, and the legs ready for sub-division. After this primary division, the side-slices are readily served in separate portions by cutting them across. In default of this strong-armed method, some carvers cut fillets off the back, and serve them, proceeding to do the same with the legs, which may or may not be previously raised out of their sockets. A third plan consists in removing the legs, and serving them in two portions each, then dividing the back into sections of about two or three inches in length, and finally removing the shoulders, and serving them also. If this plan is preferred, and the hare is to be carved by a person deficient in strength of wrist, the prominent part of the back-bone should be removed by the cook from the inside before roasting. A portion of the force-meat must of course accompany each plate. The back is considered the best, then the legs, and lastly the shoulders, which however some people prefer to any other part.

SECT. 4.—HOUSEKEEPING ACCOUNTS AND TOTAL ORDINARY EXPENDITURE.

1878. THE ACCOUNTS IN HOUSEKEEPING should be kept with great accuracy and circumstantiality, for many reasons, not the least of which is that in most cases there are two people concerned, who sometimes may take different views of the result, and if a reference to details cannot be given, it is extremely difficult to show that the total expenditure is correct. Besides this, unless there is an account kept against each tradesman, it is impossible to check him, and an error made either wilfully or by mistake can neither be detected, nor remedied if surmised. No one, however, can possibly deny the advantage of keeping good accounts; and the only objection consists in the trouble they give, which will be small if the task is performed with regularity.

1879. THE BEST MODE OF KEEPING ACCOUNTS for a house is to have a daily entry book, in which every item of expenditure is put down, either opposite a printed form or otherwise. Many people use printed books in which a list is given for each day, with ruled columns; but this seems a very useless expense, as a plain ruled book is all that is necessary for the purpose. In my opinion, the weekly account should always be kept, and the daily one need not then be attempted. But by putting down each item paid during the week *seriatim*, and then adding up the total, the week's expenses are readily arrived at.

1880. BUT, BESIDES THE WEEKLY ACCOUNT, there should be a ledger account kept, in which each tradesman should be entered under a separate head. Thus, it is well to procure a small ledger, in which the whole book is "lettered"—that is to say, it is divided into twenty-six portions, each having a letter of the alphabet assigned to it and marked on the margin. In this the manager enters under the letter B the butcher's account as it is paid, so that at the end of a month, quarter, or year, she can tell the whole outlay in that article. Bread, also, will come under the same letter. Fish will of course be posted under the letter F, and so on.

1881. TOTAL ANNUAL EXPENDITURE.—In this way there is an opportunity of arriving at—first, the weekly expenditure, which will vary in some trifling degree; and secondly, the total cost of each item set down in the table given at page 606. The plan is exceedingly simple, and only requires a knowledge of compound addition to carry it out, as the entries are all made in the same amounts as are stated on the weekly bills, or those paid at longer or shorter intervals. These may be either left open to be added up at the end of the year, or they may be added up quarterly, or even monthly, if desired; but less than the quarter seldom gives an exact idea of the yearly cost of the house.

SECT. 5.—TABLES OF WEIGHTS AND MEASURES.

1882. For the convenience of reference, the following tables of measures and weights are introduced, together with an account of the modes by which the exact capacity has been determined by Act of Parliament:

1883. MEASURES are either—1, of length; 2, of surface; 3, of solidity, or capacity; 4, of force or gravity, or, what is commonly called, weight; 5, of angles; 6, of time; and their respective standards are, in Britain—*a yard, square yard,* or *the 1-4840th of an acre, a cubic yard, a gallon, pound weight, degree, minute.* The British Act for establishing uniform measures throughout the realm, and called the *Act of Uniformity,* took effect January 1, 1826. The system thus established is called the *Imperial* system. Its *rationale* is as follows:—Take a pendulum which will vibrate seconds in London, on a level of the sea, in a vacuum, divide all that part thereof which lies between the axis of suspension and the centre of oscillation into 391,393 equal parts; then will 10,000 of those parts be an imperial inch, twelve whereof make a foot, and thirty-six whereof make a yard. The standard yard is "that distance between the centres of the two points in the gold studs in the straight brass rod, now in the custody of the Clerk of the House of Commons, whereon the words and figures 'Standard Yard, 1760,' are engraved, which is declared to be the genuine standard of the measure of length called a yard; and, as the expansibility of the metal would cause some variation in the length of the rod in different degrees of temperature, the Act determines that the brass rod in question shall be of the temperature of 62 degrees Fahrenheit. The measure is to be denominated the *Imperial Standard Yard,* and to be the only standard whereby all other measures of lineal extension shall be computed." Thus the foot, the inch, the pole, the furlong, and the mile, shall bear the same proportion to the Imperial Standard Yard as they have hitherto borne to the yard measure in general use. The Act also makes provision for the restoration of the standard yard in case of loss, destruction, or defacement, by a reference to an invariable natural standard, which is to be that proportion which the yard bears to the length of a pendulum vibrating seconds of time, in the latitude of London, in a vacuum at the level of the sea; which is found to be as thirty-six inches (the yard) to 39.1393 (the pendulum); thus a sure means is established to supply the loss which might by possibility occur. Take a cube of one such inch of distilled water, at 62 degrees of temperature by Fahrenheit's thermometer, let this be weighed by any weight, and let such weight be divided into 252,458 equal parts, then will 1000 of such parts be a troy grain, and 7000 of those grains will be a pound avoirdupois, the operation having been performed in air. Ten pounds such as those mentioned of distilled water, at 62 degrees of temperature, will be a gallon, which gallon will contain 277 cubic inches, and 274-1000th parts of another cubic inch. The standard pound is determined to be that standard pound troy weight made in the year 1758, in the custody of the Clerk of the House of Commons, such weight is to be denominated the *Imperial Standard Troy Pound,* and is to be "the only standard measure of weight from which all other weights shall be derived, computed, and ascertained; and one-twelfth part of the said troy pound is to be an ounce, and one-twentieth part of such ounce a pennyweight, and one-twenty-fourth part of such pennyweight a grain; so that 5700 such grains shall be a pound troy, and 7000 such grains a pound avoirdupois, and one-sixteenth part of such ounce a drachm. If the standard pound shall be lost, destroyed, or defaced, the act directs that it shall be recovered by reference to the weight of a cubic inch of water; it having been ascertained that a cubic inch of distilled water weighed in air by brass weights, at the temperature of 62 degrees Fahrenheit, and the barometer at thirty inches, is equal to 252,458 grains, and as the standard troy ghts and mea-

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OF LENGTH.

1 nail.
1 quarter.
1 yard.
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all kinds.

1 hand.
horses.

1 fathom.
epths.

1 link.
1 chain.
facilitate the
ts, 10 square

ACE.
quare foot.
quare yard.
perch or rod.
rood.
acre.
quare mile.

ND CAPACITY.

cubic foot.
cubic yard.

ACITY for all
, except such
vision :—
ubic in. nearly.
34⅔
69⅓
277¼
554½
2218 1-5th

				Cubic ft. nearly.
8 bushels	=	1 quarter	=	10¼
5 quarters	=	1 load	=	51⅓

The four last denominations are used for dry goods only. For liquids, several denominations have been heretofore adopted—viz., for beer, the firkin, of nine gallons; the kilderkin, of eighteen; the barrel, of thirty-six; the hogshead, of fifty-four; and the butt, of one hundred and eight gallons. These will probably continue to be used in practice. For wine and spirits, there are the anker, runlet, tierce, hogshead, puncheon, pipe, butt, and tun; but these may be considered rather as the names of the casks in which such commodities are imported, than as expressing any definite number of gallons. It is the practice to gauge all such vessels, and to charge them according to their actual contents. For further particulars on this subject, see page 830.

Imperial Measure of Capacity for coals, culm, lime, fish, potatoes, fruit, and other goods commonly sold by heaped measure:—

				Cubic in. nearly.
2 gallons	=	1 peck	=	704
8 gallons	=	1 bushel	=	2815½
				Cubic ft. nearly.
3 bushels	=	1 sack	=	4 8-9ths
12 sacks	=	1 chaldron	=	58⅔

1885. The following tables exhibit some of the most important measures of weight:—

(*a*) English Measures of Weight.—The statute of Geo. IV., c. 74, made some slight modifications in the measures of weight, but retained, in the main, the existing measures. "The troy weight," say the Commissioners of Weights and Measures, "appeared to us to be the ancient weight of this kingdom, having existed in the same state from the time of Edward the Confessor; and there are reasons to believe that the word *troy* has no reference to any town in France, but rather to the monkish name given to London, of Troy Novant, founded on the legend of Brute; troy weight, therefore, according to this etymology, is, in fact, London weight. We were induced, moreover, to preserve the troy weight, because all the coinage has been uniformly regulated by it; and all medical prescriptions, or *formula*, always have been estimated by troy weight, under a peculiar subdivision, which the College of Physicians have expressed themselves most anxious to preserve." It was resolved, therefore, to continue the use of troy weight, and also, on account of the accuracy of the troy standard, to raise the avoirdupois weight from this basis. "We found," continue the Commissioners, "the avoirdupois weight, by which all heavy goods have been for a long time weighed (probably derived from *avoirs*, averia, the ancient name for goods or chattels, and *poids*, weight), to be universally used throughout the kingdom. This weight, however, seems not to have been preserved with such scrupulous accuracy as troy weight, by which more precious articles have been weighed; but we have reason to believe that the pound cannot differ by more than one, two, or three grains from seven thousand grains troy. It therefore occurred to us, that we should be offering no violence to this system of weights, if we declared that seven thousand grains troy should be hereafter considered as the pound avoirdupois." It was accordingly enacted that, from January 1st, 1826, the standard brass weight of one pound troy weight, made in 1758, should be the genuine standard measure of weight, and be denominated the *Imperial Standard Troy Pound*, containing 5760 grains, and that 7000 such grains should be a pound avoirdupois.

(*b*) Avoirdupois Weight.

27 11-32nds grs.	= 1 drs.		
16 dr.	= 1 oz	=	437½ gr.
16 oz.	= 1 lb.	=	7000 „
28 lb.	= 1 qr.		
4 qr.	= 1 cwt.		
20 cwt.	= 1 ton		

This weight is used in almost all commercial transactions, and in the common dealings of life.

(*c*) Particular Weights belonging to this Division.

8 pounds = 1 stone, used for meat and fish

		cwt.	qr.	lb.	
7 pounds	= 1 clove				
14 pounds	= 1 stone	= 0	0	14	used in the wool trade.
2 stone	= 1 tod	= 0	1	0	
6½ tod	= 1 wey	= 1	2	14	
2 weys	= 1 sack	= 3	1	0	
12 sacks	= 1 last	= 39	0	0	

A pack of wool contains 240lb. A truss or hay weighs 56lb.; and of straw 36lb. A stone of glass is 5lb.; a seam 24 stone.

8 pounds	= 1 clove,	used for cheese and butter.
32 cloves	= 1 wey in Essex,	
42 cloves	= 1 wey in Suffolk,	
56 pounds	= 1 firkin,	

(*d*) Troy Weight.

24 grs.	=	1 dwt.	=	24 grs.
20 dwt.	=	1 oz.	=	480 „
12 oz.	=	1 lb.	=	5760 „

These are the denominations of troy weight when used for weighing gold, silver, and precious stones, except diamonds. But troy weight is also used by apothecaries in compounding medicines, and by them the ounce is divided into eight drachms, and the dram into three scruples, so that the latter is equal to twenty grains. For scientific purposes the grain only is used, and sets of weights are constructed in decimal progression, from 10,000 grains downwards to one-hundredth of a grain. By comparing the number of grains in the avoirdupois or troy pound and ounce respectively, it appears that the troy pound is less than the avoirdupois in the proportion of fourteen to seventeen nearly, but the troy ounce is greater than the avoirdupois in the proportion of seventy-nine to seventy-two nearly. The *carat*, used for weighing diamonds, is 3 1-6th grains. The term, however, when used to express the fineness of gold, has a relative meaning only. Every mass of alloyed gold is supposed to be divided into twenty-four equal parts; thus, the standard for coin is twenty-two carats fine, that is, it consists of twenty-two parts of pure gold and two parts of alloy. What is called the *new standard*, used for watch-cases, &c., is eighteen carats fine.

(*e*) APOTHECARIES' WEIGHT.—This is essentially the same as troy weight, but differently divided:—

1 grain (gr.)	=			1.097	grains avoirdupois	=	0.0648	grammes.
20 grains	=	1 scruple (℈)	=	21.94	„	=	1.296	„
3 scruples	=	1 drachm (ʒ)	=	65.82	„	=	3.888	„
8 drachms	=	1 ounce (℥)	=	526.628	„	=	31.103	„
12 ounces	=	1 pound (℔)	=	13 oz. 2 drs. 1 scruple 9½ grains, avoirdupois.				

(*f*) MEASURES USED BY APOTHECARIES.

1 minim (♏)	= 0.05915 of a millilitre.		
20 minims	= 1 fluid scruple (f ℈)	= 20 gr. avoirdupois	= 1 1-5th millilitres.
3 fluid scruples	= 1 fluid drachm (f ʒ)	= 1 dr. of water	= 0.003549 litre.
8 fluid drachms	= 1 fluid ounce (f ℥)	= 1 oz. of water	= 0.02839 litre.
20 fluid ounces	= 1 pint (O)	= 1¼ lb. of water	= ½ a litre, or rather more.
8 pints	= 1 gallon	= 10 lb. of water	= 277.274 cubic inches, or about 4½ litres.

1866. THE FOLLOWING ARE THE MEASURES OF WEIGHT AND CAPACITY used in France:

(*a*) FRENCH MEASURES OF WEIGHT.—The unit used in weighing is the gramme, which has been fixed by law, and is equal to the specific weight of the distilled water contained in one cubic centimètre. The gramme thus fixed weighs 15.432 grains troy, and 16.924 grains avoirdupois, while the kilogramme, which consists of 1000 grammes, is found to be equal to 2 livres (pounds), 5 gros, 35 grains, 15-100ths poids de marc, and to 2 pounds, 8 ounces, 3 pennyweights, 6,355 grains troy, or 2 pounds, 3 ounces, 4 drachms, 16 grains avoirdupois weight, English. As the most common things of daily consumption are sold by weight in small quantities, a great difficulty arose in introducing this part of the system; and the old denominations of weight have therefore been allowed to remain, with some modification in their actual value, taking the kilogramme as the basis. The kilogramme is divided into 2 livres, the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains. This new livre, therefore, exceeds the old one (poids de marc) by 2-100ths; so, to reduce kilogrammes into old measure, it is necessary to multiply by 2 and add 2-100ths. In the decimal system adopted in France the prefixes for *multiplying* are Greek, and for *dividing* are Latin. Thus—

Deca	means	10 times.
Hecto	„	100 „
Kilo	„	1,000 „
Myria	„	10,000 „
Deci	„	10th part.
Centi	„	100th „
Milli	„	1,000th „

We have, therefore, the milligramme, centigramme, decigramme, GRAMME, decagramme, hectogramme, kilogramme, and myriagramme as the names of the various weights.

(*b*) THE LITRE is the unit of all measures of capacity. It is a cubic decimetre = 16.028 cubic inches, or about 1¾ pint imperial of water nearly. A litre weighs exactly 1000 grammes, or 1 kilogramme, at 32 degrees Fahrenheit, and with a 30-inch barometer. As in the weights, so here we have the same prefixes—namely, the millilitre, centilitre, decilitre, LITRE, decalitre, hectolitre, kilolitre, and myrialitre—the proportions of which will readily be understood.

CHAP. II.

SOCIAL INTERCOURSE ON EQUAL TERMS.

SECT. 1.—VISITS AMONG INTIMATE FRIENDS.

1887. AMONG BLOOD RELATIONS, or with those friends who are more than usually intimate, a considerable relaxation from the ordinary rules of society is often practised. This, however, demands great caution, as there are many people in the world who prefer keeping up their full allowance of dignity under all circumstances. In the last century, it was usual for the children to show a much greater amount of outward respect to their parents than is now often seen, and no son ever thought of addressing his father without attaching the ceremonious "Sir," to the end of each sentence. Perhaps the present system is carried too far in an opposite direction, and certainly it is the fact, that the children's comfort and happiness appear to be thought of first, both by the elder and younger branches of most families, which is scarcely fair, because if the parents are to be admired for their absence of selfishness, the children ought to reciprocate the feeling by doing all in their power to return the kindness and thoughtfulness bestowed upon them. It may, therefore, be said that, as in court etiquette, so in that relating to the intercourse of families among themselves, there is a very great relaxation of the old-fashioned code. Indeed the general practice is, that members of the same family meet together when and where they please, calling upon each other at all hours, and on any days, and in fact being guided by no laws but those of kindliness towards each other. It is very delightful when this family compact can be indulged in without any drawback, but sometimes it leads to abuse, from the excessive intimacy ending in weariness, or in disputes resulting from childish quarrels about trifles. For this reason, in some families, it is thought better to meet on nearly the same terms as in ordinary society, and thus to avoid those occasions of quarrel which excessive intimacy is apt to produce. Beyond blood relations, I am strongly inclined to doubt the advantage of any intimacy carried so far as to dispense with the ordinary forms, which will be presently described.

SECT. 2.—THE FORMAL INTERCHANGE OF VISITS.

1888. THOSE WHO MIX IN SOCIETY are in the habit of reminding one another of their existence, either by personally calling on each other during certain hours, or by merely leaving their cards at the door. The hours vary somewhat according to the locality, but they may be considered as included between 1 and 5 in most places. In country places, calls are sometimes made as early as 12, and are then not extended beyond 4 in the afternoon. The ladies and idle men are the chief agents in this kind of visiting, since it is impossible for those who are engaged in business to devote the time necessary for the purpose. From a quarter of an hour to twenty minutes is about the proper time to bestow upon a call, after which most people consider they have gone through the proper form and withdraw. These visits are made at least twice a year, and on particular occasions besides, such as births, marriages, or deaths, which are detailed below.

(*a*) AFTER THE BIRTH OF A BABY, most ladies expect a call from their friends, the most intimate of whom are admitted during the month, and those more distantly connected at the expiration of that period. It is usual also to send a servant to inquire after the progress of the mother on those interesting occasions.

(*b*) ON THE MARRIAGE OF A DAUGHTER, the lady of the house expects her friends to call upon her, either on the day after or within one or two days of the wedding, when in most places cake and wine are handed round. This practice, however, is not invariable, but is guided by local rules.

(*c*) AFTER A DEATH, no calls are made until the lady of the house has sent round her cards "to return thanks for the inquiries" made during the time of mourning. It is then usual for friends to call as soon as convenient.

(*d*) PREVIOUS TO A LONG ABSENCE FROM HOME, it is usual for ladies to call upon their friends, the call being returned when they come back.

(*e*) WHEN THE PLACE OF RESIDENCE is finally changed, or if a young lady is going to be married, a call is made to signify the fact; or if the lady of the house is absent, a card is left with P.P.C. (*pour prendre congé*) written in the corner.

(*f*) WHEN THE LADY MAKING A CALL is married to a gentleman so engaged as to preclude his calling with her, it is considered sufficient if she leave his card at the house for the master of it.

(*g*) THE INTERVAL ALLOWED TO ELAPSE between the reception of the call and its return, marks the degree of intimacy which is desired. Formal calls on particular occasions ought to be returned within a few days, if possible; failing which an apology is due.

(*h*) **In Leaving Cards** upon a married couple, it is usual for the lady to leave only one card, and for a gentleman to leave two. When there are daughters introduced into society, or female friends staying in the house, a card may be left for each of them, if they are personally known to the caller, or the end of that designed for the mistress of the house may be turned up, though in point of strict etiquette this is now confined to those daughters who are not yet introduced into society.

(*i*) **A Card is generally Left** on the day after a party, or within a day or two of that time.

1889. It is not customary to offer any refreshment to callers in towns, but in country districts, when the caller has come a considerable distance, such an attention is usual, and often very acceptable.

Sect. 3.—Attending Parties from Home.

1890. **Private Breakfast Parties** are not given, excepting on special occasions, almost the only one being a marriage, or a christening, when a grand breakfast is the invariable rule. In attending such a reunion, the hour is always specified, and all that is necessary is to go in morning costume.

1891. **Public Breakfasts, Archery Meetings**, &c., are very common, and are generally held late in the day. They also require a morning costume, which is, however, generally made more light and elegant than for ordinary occasions.

1892. **Dinner Parties** are attended by special invitation, and in a dress particularly intended for them. It is now the custom to specify the exact hour of dinner, and to attend punctually at that time. By complying with this rule, the temper of the mistress of the house and her cook may be often saved from derangement, to say nothing of that of the master and the other guests.

1893. **Evening Parties** are of so many shades and degrees, that very little can be said about the amount of dress required. In some cases a plain dress is the appropriate one, while in others it would be wholly out of place. The lady should, therefore, ascertain the nature of the party, which she may generally do from the form and tenor of the invitation, and act accordingly. In ordinary private life introductions are required as in public assemblies before dancing together is allowed; and in very large private balls the practice is quite as necessary as in those which are public, and is attended with manifest advantage.

Sect. 4.—Giving Parties at Home.

1894. **In Giving Parties**, it is often the case that a larger stock of glass, china, and plate is required than is possessed by the lady of the house. To meet this demand, the vendors of glass and china let out services to the public; and the silversmiths have generally in large towns an assortment of plate at their service. Chairs and tables may also be hired in most places.

1895. **Pastrycooks** are in the habit of undertaking to supply all kinds of pastries and the other materials for refreshing the inward man, together with, if desired, plate, china, and glass, table-cloths, and all the *etceteras* required. When, therefore, there is a deficiency in these articles, or when the party is not likely to be often repeated, the plan may be economical, as well as a relief, in point of trouble and anxiety. A breakfast or supper party (without wine) may in this way be given at about 4s. to 10s. per head, the former sum finding a very good array of dishes, and the latter being sufficient to ensure a very splendid set out. The charge for dinner parties varies from 12s. to £1 1s. per head, according to the kind of dinner required.

1896. In the present day it is too often the case that dinner parties, as well as those given in the evening, are carried to such an extravagant extent, that a serious outlay is involved, which may not always be agreeable to those invited, some of whom are neither able, nor, if able, willing to return such a display. It will, I believe, be found, that on the whole more pleasure is afforded if less expensive feasts are offered, and they are made more frequent, with a smaller number of guests, so as to ensure cordiality and comfort. No one should attempt in a dinner party to entertain more guests than the table and room will conveniently accommodate, or than the servants can wait upon without awkwardness; nor should an expense be incurred which will produce an inconvenience to the giver, or entail it upon the receiver when it has to be returned. In this country people do not seem to feel happy until their stomachs are satiated, so that it is in vain to expect the continental receptions to attain popularity. But still a comparatively plain dinner, if nicely cooked, will always be appreciated, while a prettily set out, but inexpensive, supper, is often more attractive than a heavy, though costly, effort of the adjacent pastrycook, or of the home establishment.

1897. **The Average Cost** of an economical dinner-party for twelve persons, when of frequent occurrence, and exclusive of the wine, may be taken at £5. Many people spend ten times that sum upon a grand "spread," but for really agreeable and social dinner parties, the above is sufficient to procure what is wanted, calculating the residue as useful for the house, and as coming in to the ordinary expenditure. The actual dinner, it is true, costs more than the above sum, but as the remains will feed the household for a week, the difference from the usual whole weekly expenditure will not be more than £5 or £6, unless every delicacy of the season is considered indispensable. At all events, it is a fact, that many people celebrated for the pleasantness of their dinner parties, confine themselves to the above sums.

1898. THE FOLLOWING SERIES OF BILLS OF FARE are introduced as a guide to those who are anxious to follow out the present fashion. The first may be considered as a specimen of the style adopted in the highest circles of London society, being in fact very similar to those introduced at the *very highest* tables in the present year. The dessert may or may not be placed on the table, some people disliking the smell of fruit; besides which the silver is to a certain extent hidden or eclipsed by it. The fish and top-dishes are usually carved on the side-table, and handed round by the servants; also the mutton, venison, chickens, game, &c.; the tureens are left on the table till the puddings are put on. Many only have two sweets and two vegetables for corners; the sweets being handed, while the puddings are being brought in by the servants. Others again merely deviate from the above plan, by ornamenting the table with dried fruits and pyramids, in addition to the usual display of silver, and have the top dishes put on the table for a few seconds only, and then removed to be carved at the side-table, and the fresh fruit brought in after the cheese has been handed round. A third plan consists in having nothing but dessert on table, and a bill of fare to every two guests, the dishes being all from the first placed and carved on the side-tables, which saves much trouble in garnishing. Many who adopt this style have only three or four entrées for sixteen or eighteen guests. Even in all those cases where the dishes are placed on the table, flanks are seldom now introduced. Ice is becoming every year in greater request, both as pure ice placed in the glasses, and in the shape of water and cream-ices, as well as ice-puddings. The two first of these are introduced as a part of the dessert, and are handed round by the servants before they leave the room, the last being made a part of the usual sweets. The ARRANGEMENT OF BREAKFASTS depends greatly upon the season of the year, ornamentation with natural flowers being the chief means employed for decorative purposes. Epergnes, vases, small flowering plants, and fruits in pots, are introduced on the table with a very light and elegant effect. The sweets are also thickly garnished with flowers, and sometimes wreaths are placed round them. This, however, depends so much upon the opportunities for obtaining choice flowers and fruit, and upon the taste of the parties concerned, that no minute directions can be here given. Every thing is cold excepting tea, coffee, and chocolate, and the rolls and fancy breads, which are served hot. Sugar and cream are placed at short intervals round the table, so as to be within the reach of all the guests. LUNCHEONS, in their arrangements, are very similar to breakfasts, except that they are not ornamented with flowers to the same extent; and that instead of tea and coffee, a hot top and bottom, and also a principal dish of sweets, are introduced, with hot vegetables handed round. TEA and COFFEE are served soon after dinner, the latter being introduced on the dinner-table for the gentlemen, and in the drawing-room it is handed round to the ladies. When tea is announced to the gentlemen, it is served to both them and the ladies in the drawing-room. Instead of dessert, a continental plan is sometimes now adopted in England, in which finger-glasses are placed on the table before each person, and when they have been used, they are taken away, coffee being immediately handed round on a small tray, which is then left on the table, the servant retiring from the room. This plan is intended to supersede the English custom of sitting over the wine, as the gentlemen then leave the dining-room at once. It is, however, only suited to quiet family meetings, or those in which all are known to be averse to sitting long after dinner. For a large evening party, tea and coffee are made by the servants in a room devoted to the purpose, and partaken of by each guest before entering the reception-room, a long table or counter being generally put up, covered with a large table-cloth, and arranged with biscuits, small cakes, &c. SEVERAL BILLS OF FARE FOR SUPPER PARTIES are also shown in the following pages; but they are now generally given without seats, counters being arranged on two sides of the room, with servants behind. Hot soup is always given, and chickens, cut up and tied as described at (*c*), page 617. Ice is not placed on the counters, but supplied by the servants as wanted, the doors being opened at an early hour of the evening, and the guests going in when ever they wish for refreshment.

(*a*) FASHIONABLE BILL OF FARE FOR A DINNER OF FROM 16 TO 28 COVERS:—

FIRST COURSE.

Clear soup.

Remove—Chickens and tongue.

Rissoles. Lamb cutlets.

(Vase of flowers.)

Fish. (Epergne.) Fish.

(Vase of flowers.)

Sweetbreads. Pureé soup. Fillets of duck.

Remove—Saddle of mutton.

Vegetables on side-table. Fish and removes carved on side-table. Covers on tureens. (See remarks above.)

SECOND COURSE.

Partridges.

Vegetables dressed. Tureen taken off for soufflé. Cream.

(Vase.)

(Epergne.)

Jelly. (Vase.) Pastry or lobster salad.

Grouse.

Cheese fondu or pastry.

Game carved on side-table.

(*b*) BILL OF FARE FOR A DINNER OF 8 COVERS IN JANUARY OR FEBRUARY:—

FIRST COURSE.

Jerusalem artichoke soup.

Remove—Boiled chickens.

Tongue. (Epergne.) Curried rabbit.

Cutlets of soles.

Remove—Haunch of mutton

Vegetables—mashed potatoes, brocoli, sea-kale, stewed white.

SECOND COURSE.

Leamington pudding.

Mince pies. (Epergne.) Blancmange.

Brace of partridges.

(*c*) BILL OF FARE FOR 12 COVERS IN JANUARY OR FEBRUARY:—

FIRST COURSE.

Hare soup.

Remove—Boiled turkey.

Slices of tongue stewed. (Vase.) Chicken curry.

(Epergne.)

Pork steaks, with apple sauce in the centre. (Vase.) Sausages.

Cod fish.

Remove—Sirloin of beef.

Vegetables—whole potatoes, potato balls, Jerusalem artichokes, on side-table.

SECOND COURSE.

Plum pudding.

Jelly (Vase.) Tartlets.

(Epergne.)

Mince pies (Vase.) Solid custard.

Brace of Pheasants.

(*d*) BILL OF FARE FOR 16 OR 18 COVERS IN JANUARY OR FEBRUARY:—

FIRST COURSE.

Turbot.

Remove—Turkey, garnished with sausages.

Stewed celery. (Vase.) Oyster patties.

Tongue. (Epergne.) Stewed ox cheek.

Egg balls. (Vase.) Mutton chops, with tomato sauce.

Gravy soup.

Remove—Haunch of mutton.

Vegetables—mashed potatoes, mashed carrots and turnips, brocoli, on side-table.

SECOND COURSE.

Partridges.

Remove—Cabinet pudding.

Jaune mange. (Vase.) Mince pies.

Potato chips. (Epergne.) Lobster salad.

Meringues. (Vase.) Italian cream.

Hare.

Remove—Fondu.

(*e*) BILL OF FARE FOR 8 COVERS IN MARCH:—

FIRST COURSE.

Onion soup.

Remove—Boiled calf's head.

Chine. (Epergne.) Veal cutlets.

Boiled whiting.

Remove—Loin of mutton.

Vegetables—potatoes, cabbage, on side-table.

SECOND COURSE.

Potato pudding.

Arrowroot blancmange. (Epergne.) Lemon cream.

Maccaroni.

(*f*) BILL OF FARE FOR 12 COVERS IN MARCH:—

FIRST COURSE.

Carrot soup.

Remove—Boiled calf's head.

Stewed sea-kale. (Vase.) Mutton cutlets.

(Epergne.)

Scotch collops. (Vase.) Eggs and spinach.

Brill.

Remove—Roast fillet of veal.

Vegetables—potatoes, brocoli.

SECOND COURSE.

Pound puddings.

Italian cheese. (Vase.) Curd cheese-cakes.

(Epergne.)

Open tart. (Vase.) Coffee cream.

Guinea fowls.

(*g*) Bill of Fare for 16 or 18 Covers in March:—

FIRST COURSE.

White soup.

Remove—Stewed eels.

Remove—Stewed breast of veal.

Fish patties. (Vase.) Scalloped mutton.

(Epergne.)

Veal olives. (Vase.) White sweetbreads.

Boiled soles, garnished with smelts.

Remove—Saddle of mutton.

Vegetables — potatoes, Jerusalem artichokes, Brussels sprouts, on side-table.

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SECOND COURSE.

Roast pigeons.

Chester pudding.

Calf's-feet jelly (Vase.) Apricot cream, in shape.

(Epergne.)

Blancmange. (Vase.) Cake and custard.

Pea-fowl.

Remove—Rhubarb tart.

(*h*) Bill of Fare for 8 Covers in April or May:—

FIRST COURSE.

Clear gravy soup with asparagus.

Remove—Boiled leg of lamb.

Veal cutlets. (Epergne.) Lamb's fry.

Fried soles.

Remove—Stewed beef.

Vegetables—young potatoes, asparagus, on side-table.

SECOND COURSE.

Prussia puffs.

Apples and custard. (Epergne.) Stewed pears.

Ramakins.

(*i*) Bill of Fare for 12 Covers in April or May:—

FIRST COURSE.

French soup.

Remove—Boiled fillet of veal, with white sauce.

Faces. (Vase.) Potatoe balls.

(Epergne.)

Rissoles. (Vase.) Sweetbreads.

Stewed lamperns.

Remove—Quarter of lamb.

Vegetables — young potatoes, asparagus, cauliflower, on side-table.

—

SECOND COURSE.

Selkirk puddings.

Solid syllabub. (Vase.) Potatoe cheese-cakes.

(Epergne.)

Stewed Normandy pippins. (Vase.) Rice flummery.

Leveret.

(j) BILL OF FARE FOR 16 OR 18 COVERS IN APRIL OR MAY:—

FIRST COURSE.

Mock-turtle soup.

Remove—Stewed calf's head.

Rissoles.	(Vase.)	Curried salmon.
	(Epergne.)	
Lobster patties.	(Vase.)	Sweetbreads, stewed brown.

Salmon.

Remove—Quarter of lamb.

Vegetables—young potatoes, asparagus, salad and ham, on side-table.

SECOND COURSE.

Asparagus.

Remove—Marlborough pudding.

Trifle.	(Vase.)	Orange jelly.
Open tart.	(Epergne.)	Green apricot tart.
Gateau de Pommes.	(Vase.)	Stone cream.

Three spring chickens.

(k) BILL OF FARE FOR 8 COVERS IN JUNE OR JULY:—

FIRST COURSE.

Green pea-soup.

Remove—Roast ducks.

Lamb cutlets.	(Epergne.)	Beans and bacon.

Stewed lamperns.

Remove—Fillet of veal.

Vegetables—young potatoes, peas, salad, on side-table.

SECOND COURSE.

Soufflé pudding.

Chocolate cream.	(Epergne.)	White clouted cream.

Green currant tart.

(l) BILL OF FARE FOR 12 COVERS IN JUNE OR JULY:—

FIRST COURSE.

Clear gravy soup, with thin pieces of carrot and French beans cut into it.

Remove—Boiled couple of chickens.

Tongue.	(Vase.)	Fish patties.
	(Epergne.)	
Sweetbreads, done white.	(Vase.)	Veal cutlets.

Stewed lampreys.

Remove—Quarter of lamb.

Vegetables—potatoes, French beans, peas, salad, on side-table.

SECOND COURSE.

Tea-cup puddings.

Lemon jelly.	(Vase.)	Stewed blackcaps.
	(Epergne.)	
Whipped cream.	(Vase.)	Cake and custard.

Stewed pigeons.

(m) BILL OF FARE FOR 16 OR 18 COVERS IN JUNE OR JULY:—

FIRST COURSE.

White soup with maccaroni.

Remove—Boiled breast of veal, done white.

Stewed cauliflower.	(Vase.)	Ham, garnished with greens.
Rabbit curry.	(Epergne.)	Chicken with rice.
Lamb chops, with potatoes in the centre.	(Vase.)	Stewed cucumbers.

Salmon.

Remove—Venison.

Vegetables—potatoes, peas, salad, on side-table.

SECOND COURSE.

Peas.

Remove—Ice pudding.

Gooseberry fool.	(Vase.)	Calf's-feet jelly.
Tart.	(Epergne.)	Lemon cheese-cakes.
Arrowroot blancmange, with strawberry cream.	(Vase.)	Whipped fruit cream.

Couple of ducks.

(*n*) BILL OF FARE FOR 8 COVERS IN AUGUST OR SEPTEMBER:—

FIRST COURSE.

Brown soup.

Remove—Mutton cutlets, with stewed mushrooms in the middle.

Tongue.	(Epergne.)	Vegetable marrow.*

Soles.

Remove—Fillet of veal.

Vegetables—potatoes, French beans, salad, on side-table.

SECOND COURSE.

Sweet omelet.

Trifle.	(Epergne.)	Tartlets.

Brace of birds.

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* Cut in slices lengthways, put on a toast, and white sauce poured over.

(*o*) BILL OF FARE FOR 12 COVERS IN AUGUST OR SEPTEMBER:—

FIRST COURSE.

White soup.

Remove—Fowls.

(Vase.)

Ham.	(Epergne.)	Curry of rabbits.

(Vase.)

Cod.

Remove—Saddle of mutton.

Vegetables—potatoes, mashed vegetable marrows, on side-table.

SECOND COURSE.

Lemon apple pudding.

(Vase.)

Jelly.	(Epergne.)	Tipsy cake.

(Vase.)

Brace of birds.

(*p*) BILL OF FARE FOR 16 OR 18 COVERS IN AUGUST OR SEPTEMBER:—

FIRST COURSE.

Mock-turtle soup.

Remove—Chickens.

Lobster patties.	(Vase.)	Lamb cutlets, with stewed beans in centre.
	(Epergne.)	
Veal cutlets.	(Vase.)	Currie.

Turbot.

Remove—Neck of venison.

Vegetables—potatoes, peas, salad, on side-table.

SECOND COURSE.

Birds.

Jelly. (Vase.) Cheese-cake.

(Epergne.)

Stone cream. (Vase.) Apple cake, with custard.

Leverets.

(q) BILL OF FARE FOR 8 COVERS IN OCTOBER OR NOVEMBER:—

FIRST COURSE.

Vermicelli soup.

Remove—Veal cutlets, white.

Harrico mutton. (Epergne.) Minced beef, with wall of potatoes.

Brill.

Remove—Roast chickens.

Vegetables—potatoes and beans on side-table.

SECOND COURSE.

Pancakes.

Léche crêma. (Epergne.) Apple tart.

Hare.

(r) BILL OF FARE FOR 12 COVERS IN OCTOBER OR NOVEMBER:—

FIRST COURSE.

Ox-tail soup.

Remove—Hashed calf's head.

(Vase.)

Chickens. (Epergne.) Tongue.

(Vase.)

Cod.

Remove—Haunch of mutton.

Vegetables—potatoes, vegetable marrow, on side-table.

SECOND COURSE.

Marlborough pudding.

(Vase.)

Lemon cream. (Epergne.) Pastry.

(Vase.)

Charlotte russe. Ratifia cream.

Hare.

(s) BILL OF FARE FOR 16 OR 18 COVERS IN OCTOBER AND NOVEMBER:—

FIRST COURSE.

Mulligatawny soup.

Remove—Chickens with tongue in the centre.

Oyster patties. (Vase.) Beef olives.

(Epergne.)

Stewed onions. (Vase.) Sweetbreads.

Turbot.

Remove—Sirloin of beef.

Vegetables—beans, potatoes, &c. on side table.

SECOND COURSE.

Pheasant.

Remove—Soufflé.

(Vase.)

Jaune mange. Lemon cheese-cakes.

(Epergne.)

Tartlets. Sir Walter Scott's wassail bowl.

(Vase.)

Brace of partridges.

(t) BILL OF FARE FOR 8 COVERS IN DECEMBER:—

FIRST COURSE.

Jerusalem soup.

Remove—Boiled leg of mutton.

Rabbit curry. (Epergne.) Veal cutlets.

Brill.

Remove—Stewed beef.

Vegetables—potatoes, sea-kale, on side-table.

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SECOND COURSE.

Adelaide puddings.

Apple jelly. (Epergne.) Solid custard.

Grouse.

(u) BILL OF FARE FOR 12 COVERS IN DECEMBER:—

FIRST COURSE.

Carrot soup.

Remove—Turkey.

Pork chops, with potatoes in the middle. (Vase.) Beef-steaks

(Epergne.)

Ham. (Vase.) Stewed mushrooms.

Cod.

Remove—Haunch of mutton.

Vegetables—potato balls, brocoli, Jerusalem artichokes, on side-table.

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SECOND COURSE.

Ramakins.

Lemon jelly. (Vase.) Mince pies.

(Epergne.)

Trifle. (Vase.) Blancmange.

Hare.

(v) BILL OF FARE FOR 16 OR 18 COVERS IN DECEMBER:—

FIRST COURSE.

Clear soup.

Remove—Turkey.

Harrico mutton. (Vase.) Stewed celery.

(Epergne.)

Vol au vent of Lobster. (Vase.) Ham.

Cod.

Remove—Roast beef.

Vegetables—potatoes, brocoli, on side-table.

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SECOND COURSE.

Woodcocks.

Remove—Plum pudding.

Mince pies. (Vase.) Italian cheese.

(Epergne.)

Lemon sponge. (Vase.) Apple tart filled up with custard.

Brace of pheasants.

LUNCHEON FOR 40 OR 50.

Turkey.

Pastry. Cream.

Blancmange.

Partridges. Oyster patties.

Pickled salmon.

Peaches. Grapes.

Pheasants. (Epergne.) Ham.

Grapes. Nectarines.

Lobster salad.

Pigeon-pie. Partridges.

Jaunemange.

Jelly. Pastry.

Chickens and tongue.

WEDDING BREAKFAST FOR 40, IN JULY.

Tongue.	Muffins.	Solid custard.	Sugar and cream.	Chicken pie (raised). (Flowers.) Fancy bread. Honeycomb	Sugar and cream.	Pastry.	Breakfast cakes.	Roast chickens.
Potted veal.	Butter.	Pressed beef.	Wine jelly.	CAKE (in shape). Peaches. (Vase of flowers.) Strawberries.	Lemon sponge.	Pigeons in jelly.	Butter.	Potted shrimps.
Cold salmon.		Lobster salad.	Purple grapes.	Cake.	White grapes.	Lobster salad.		Savoury pie.
Potted beef.	Butter	Calf's-head pie.	Italian cream.	Strawberries. (Vase of flowers.) Cherries. SPONGE CAKE (in shape).	Wine jelly	Potted veal	Butter.	Potted ham.
White chickens.	Breakfast cakes.	Pastry.	Sugar and cream.	Marmalade. Fancy bread. (Flowers.) Ham, ornamented.	Sugar and cream.	Blancmange.	Muffins.	Tongue.

Tea, coffee, and chocolate handed round.

STAND-UP SUPPER FOR FROM 60 TO 100, ARRANGED ON TWO COUNTERS, WITH SERVANTS BEHIND.

		Pheasant.		
Rolled ham.		(Vase of flowers.)		Oyster patties.
		Apple trifle.		
	Stone cream.	Lobster salad.	Italian cream.	
White soup.	Dried fruits.	(Epergne of flowers.)	Biscuits.	Chickens, cut up.
	Lemon sponge.	Pickled salmon.	Whipped cream.	
		Solid syllabub.		
Lobster patties.		(Vase of flowers.)		Potted meat.
		Savoury pie.		

		Scalloped oysters.		
Partridges.		(Vase of flowers.)		Potted meat, in shape.
		Tipsy cake.		
	Blancmange.	Tongue.	Wine jelly.	
Turkey, cut up.	Oranges.	(Epergne of flowers.)	Grapes.	White soup.
	Orange jelly.	Pheasants.	Solid custard.	
		Trifle.		
Meat cake.		(Vase of flowers.)		Partridges.
		Potted meat sandwiches.		

Glasses of custards, creams, and jellies to be placed about the table, and a supply of ices behind it. Some of the dishes should be garnished with crackers.

PLAIN SAVOURY SIT-DOWN SUPPER FOR 50.

Pheasants. A ham, garnished with paste. Tongue.

Cheese-cakes. Stone cream. Oyster patties.

Potted shrimps.

Cold turkey or fowls. Tipsy cake. Wine Jelly. Cake. (Epergne with flowers.) Cake. Orange Jelly Trifle. Round of beef.

Potted lobster.

Veal patties. Blancmange. Tartlets.

Tongue. Savoury pie. Partridges.

Fill the vacant spaces of the table with jelly in glasses, custards or whipped cream, raspberry, lemon, &c., &c.

SIT-DOWN SUPPER FOR 12.

Potted shrimps. Sponge cake. Mixed biscuits.

Glasses of jellies
and cream.

Chickens. Jelly. Sweet sandwiches. Glasses of jellies and cream. ORANGES. Glasses of jellies and cream. Tartlets. Custards. Tongue.

Glasses of jellies
and cream.

Lemon creams. Pigeon-pie. Potted-meat sandwiches.

CHAP. III.

THE DUTIES OWING TO OUR POORER NEIGHBOURS.

SECT. 1.—VISITING THE POOR.

1899. A REGULAR CODE OF RULES and directions for visiting the poor has been published by the District Visiting Society, some of which are here embraced in the text, while others are passed over as, in my opinion, injurious to those for whom they are kindly meant. A long and close watching of the working of these societies has convinced me of the existence of some errors, which are not, however, in principle, for nothing can be said on this point prejudicial to this noble institution, but arising solely from the impossibility of meeting with a sufficient number of fit and proper persons to conduct the business of such an establishment. Indeed, few people have sufficient judgment to undertake such a responsible office, which requires an amount of delicacy and tact rarely combined in the same individual. The poor are as alive to fancied slights as any of their superiors; and while they are ever ready to receive advice from those in whom they can place confidence, they are very quick in ascertaining where it can be reposed with safety. The chief defect in visitors lies in their ignorance of the feelings of the poor, and in their fancying that whatever they themselves advise must be good; forgetting that they are often ignorant of all the circumstances affecting their charge; and not always having either power or industry enough to make the investigation. No one likes to be *made* to go right by compulsory means, and the poor often rebel at interference, because it is too dictatorial; they require advice and sympathy, and prize it far above money in some cases, though I know full well that this last article is too precious to them to be lost sight of in the calculation. With an empty stomach the means of procuring food appears the grand aim of the poor man (or woman); and it is almost useless to attempt doing good in other ways, until there is some hope afforded of allaying the cravings of nature. It is the same in sickness; what is first thought of is the body, and if the visitor can only suggest any expedient which will minister to its urgent wants, she may *afterwards* gain a hold in other and really more important matters. Visitors should feel all this, and act upon it, when many in their district would bless the hour of their coming across their thresholds, instead of complaining, as I have often heard, "that Mrs. —— little knows the value of time, or she would not hinder me so." Beyond the assistance in getting work, which is what is chiefly wanted, the greatest effect is produced by showing how the weekly money can be best laid out. The poor generally pay 30 per cent. for their articles of food above the market price, chiefly because there are so many bad debts made by the shopkeepers who serve them, and who must therefore make the good pay for the bad. If, therefore, the district visitor interest herself in showing how a stock of any article may be purchased with the above saving, she would really benefit her *protegé* to that extent. Nothing would more tend to raise the state of the poor than an encouragement of habits of forecast, so that a stock of flour, bacon, oatmeal, &c., might be purchased at the lowest price. In coals they pay away nearly twice as much per ton as their superiors in station, and in many other articles nearly in the same ratio. It is very true that often they cannot trust a stock of these things about the house, but the visitor might easily arrange so as to put them under lock and key in the house itself, and give them out as they are wanted from visit to visit. In this way the visitor might make herself substantially useful, after which "the word in season" would be gratefully received, and would be likely to make a due impression. But all this would require great firmness, knowledge of business, and tact—qualities which can scarcely be expected in the usual run of visitors, who are necessarily the most idle part of the world. Mothers and fathers with large families have a district at home, and cannot find the time to do much for others, so that it is chiefly upon young people and what are called old maids and bachelors that reliance is placed for carrying out the directions of any clergyman or society. Here and there one of these may be sufficiently experienced to afford advice; but too often the poor can tell them far more than they can tell the poor. Nevertheless the object is a good one, and ought not to be discouraged because less benefit is derived from imperfect instruments than might be obtained from others more fully calculated for the work. The following are the instructions which are generally issued by the District Visiting Societies:—

"INSTRUCTIONS FOR VISITORS OF THE POOR.

"You will visit families as often as time and other circumstances may render expedient, with a view of promoting their temporal and spiritual improvement.

"You will make it your first object to gain their attention and secure their confidence, by convincing them that you are actuated solely by motives of Christian charity and kindness, and have no other end in view than their welfare.

"Many topics of friendly conversation and inquiry will readily suggest themselves to you; and in the selection of these much will depend on your own good sense and discretion. The following hints are suggested:—

"Your first inquiries should relate to subjects which afford the greatest interest to the poor, such as the number of which the family consists—the ages of the children—whether they attend any school, or can read—whether the family possesses a Bible or any other religious books; and, where you find a disposition to answer your inquiries, you can endeavour to ascertain whether the persons you visit attend public worship, their manner of spending Sundays and leisure hours—their occupation, and the period of their residence in the district. If temporal relief, however, is required, you will also inquire their means of subsistence—whether by parochial aid, labour, charity, or otherwise—the amount of rent, &c., &c.

"You will gently and prudently lead their attention to religious subjects, endeavouring to impress their minds with a sense of the importance of their immortal souls, and of the value of the Holy Scriptures, as a message of mercy from God to sinful man. You will urge on them the duty and privilege of observing the Sabbath, of prayer, and of attending public worship. You will point out to them, as occasion may require, their relative duties, and avail yourself of suitable opportunities of reproving open vice. You will pay particular attention to the young, the sick, and the aged. You will encourage parents to send their children to day and Sunday schools, and recommend grown-up persons, who cannot read, to attend adult evening schools. You will inform those who are without a Bible how they may obtain one, and suggest weekly subscriptions for this purpose.

"It will be necessary that you should be provided with information as to the places of worship, adult, day, Sunday, and infant schools in the neighbourhood.

"You will not fail to inculcate habits of industry, and cleanliness both of rooms and persons. Where practicable, employment should be suggested to persons out of work, and in many cases it will be desirable to point out the advantages of the savings' bank, and encourage weekly deposits for rent, endeavouring also to obtain, when specially required, tickets of admission to hospitals, dispensaries, and other charitable institutions.

"You will avoid as far as possible encroaching on the necessary occupations of families and individuals; and with this view it will be very important that you should ascertain the time when visits are most acceptable, and put persons the least out of their way.

"You will not attempt to force yourself on those who show a determined aversion to your visits; but you will express to them in a friendly manner your readiness to call upon them again, should they become more disposed to receive you, and occasionally to repeat your visits.

"Remember the Master whom you serve; and in cases of opposition or insult, govern your temper, return good for evil, blessing for cursing. Be patient towards all men, in meekness instructing those who oppose themselves."

SECT. 2.—CHARITIES.

1900. BY CHARITIES, I understand here that substantial assistance in money, or money's worth, which the deserving poor have a right to expect from those who possess the superfluities of life. The law provides a certain refuge for all the poor and needy, which certainly keeps them from starvation and exposure to the weather, but which is made so uncomfortable that few will have recourse to it who can possibly avoid it. In a pecuniary point of view, a saving is effected by any payment of small sums less than the weekly cost of a pauper by which individuals are kept out of the house; and, therefore, every one who can support himself by receiving a small temporary assistance from a sympathising neighbour, is doing good to the whole body of society, as well as keeping up his own self-respect, while the party giving the assistance is in like manner benefiting himself and all around him. But in rendering this aid, caution is sometimes necessary, lest undeserving objects are relieved; for this not only leads to actual loss of money in the particular case, and to the encouragement of deception and fraud, but it occasions heart-burning and jealousy on the part of those who really would be deserving recipients of bounty. I look upon the poor man and his family, when in sickness, as objects of the most tender compassion; and I know few situations more dreadful to those who have seen better days than to lie upon a bed of illness, without food, or, what a sick man prizes still more highly, good medical aid. Under such circumstances, therefore, no man, or woman either, loses self-respect in accepting any amount of aid;

but, of course, if there is a chance of its being afterwards returned, it is so much the more gratifying to the recipient. There are always numerous cases of this kind in every neighbourhood unrelieved, or nearly so; and if those who are anxious to do good would limit their endeavours to cases of illness, they would escape many chances of imposition which are so often practised. Few medical men will object to answer an inquiry relative to a poor patient's condition, especially as under the present system of affording medical relief, it is to their interest to effect a cure as rapidly as possible. The position of a Poor Law medical officer is a difficult one, inasmuch as the holder must either over-tax his energies, and work in great measure gratuitously, or he must, as he sometimes does, neglect his charge to an extent which is scarcely credible. I do not know that more can be expected from these gentlemen, as a body; and I am quite sure that many of them act up to their conscientious notions of what they ought to do; but at the same time it cannot be doubted that hundreds and thousands of lives are sacrificed every year in this country from deficient medical relief; and this is especially true in remote country districts. It is a heartless task to attend paupers at their own homes; and I can scarcely wonder that they are neglected, for they are tiresome, disobedient, and careless. I do not, therefore, blame either the medical officer, or the guardians of the poor, but I pity the poor themselves; and I feel confident that in sickness much might be done with them in attaching them to their benefactors. I know full well the absence of gratitude which they sometimes evince; but, as a rule, I am quite sure that any real service done them in sickness is remembered with feelings of respect and affection, which scarcely any other act could produce. If medical service is grudgingly afforded, or, if they see that it is compulsory, they do not feel grateful, nor is gratitude due in such a case; but only let them have it given to them freely by another person, in whom they feel confidence, or even let them be relieved by any good Samaritan out of the profession, and the gratitude is too often raised to a height which ought to be reserved for the Almighty alone. I believe that in this country, excepting in years of scarcity, either of work or provisions, a healthy man and woman can always keep himself in food, and therefore I have no great compassion for them. But for those in sickness, or who are not strong, the task is a terrible one, in spite of all legal provision made to meet the evil. Hundreds and thousands are obliged to work in pain, or in a state of weakness, which is almost worse to bear; and these instances might well claim the charity of their neighbours. The great difficulty is for even a medical man to detect the difference between idleness and inability, for in some cases there is nothing to indicate, with certainty, the nature of the disease. Over-work and bad feeding often wear down the machine and render it unfit for daily toil, without producing any positive and evident symptoms of disease. These cases are common enough, and are subjects for pity perhaps greater than most others, so that caution should be exercised, lest a deaf ear is turned to the deserving, from a fear of imposition, which is notoriously practised in some cases. It is a difficult subject to deal with practically, and experience is required to distinguish the deserving from the undeserving, in this as well as in other classes of life. Let it be remembered that the poor are not the only hypocrites in the world, and, in administering *material* charity, that there is another kind, the practice of which is too forcibly enjoined to admit of a dispute.

1901. UNDER THE HEAD OF CHARITIES, may of course be included all subscriptions to hospitals, infirmaries, dispensaries, lying-in charities, orphan asylums, blind asylums, &c., all of which are so valuable, as at once to recommend themselves to those who have the means. It would take up too much space to refer to all those at length, and the chief of them are too extensive to be much under the control of those individuals to whom chiefly this book is addressed; but the following rules may perhaps serve to aid in establishing small local charities, such as lying-in charities, &c.

RULES OF A LADIES' LYING-IN CHARITY.

1. That a manager be appointed who will purchase, cut out, and give directions for the making and repairs of the bags of linen.

2. That the relief be confined to poor married women who have lived in the parish for two years.

3. Every subscriber of half a guinea may recommend two, and if of one guinea four, and so on.

4. A subscriber of five shillings and sixpence annually, may recommend one woman for the charity.

5. Subscriptions are payable in advance; due at Christmas.

6. It is requested that every lady who gives a ticket shall visit the poor woman, or cause her to be visited, at least twice during the month of her confinement, that she may see how she recovers, and give

what assistance may be necessary in the shape of gruel or caudle.

7. That no woman be allowed the linen, or any benefit from the charity, if she neglects to produce a certificate of the vaccination of her last child.

8. That a woman should apply for her ticket three months before she expects to want the linen; as soon as she is confined she is to send her ticket to the manager by some person who can bring her back the linen.

9. At the end of the month, the linen is to be returned to the manager clean, and perfect in numbers. If the manager finds that it is so, the poor woman is to receive one shilling from the funds of the charity.

10. Each bag of linen to contain:—One pair of sheets, two woman's shifts, two night-caps, two bed-gowns, two baby's night-gowns, two flannels, two bandages, two caps, two shirts, twelve diapers, and one flannel petticoat given to the woman.

SECT. 3.—SELF-SUPPORTING SOCIETIES.

1902. One of the most useful ways in which aid can be afforded to the poor, consists in contributing in various modes to societies which are either partly or wholly supported by themselves. The very poor often remain in their poverty, solely because they are deficient in education, and therefore they cannot judge of the correctness of the accounts which are tendered to them of the advantages of benefit clubs, clothing clubs, insurance societies, &c.; and they are liable to be tempted into joining certain clubs in which three-quarters of the weekly payments are spent in drink and other extravagances. If, therefore, any one *in whom the poor man can repose confidence*, will take the trouble to show him how he may best co-operate in procuring schooling, or medical advice, or clothing, or coals, or other necessaries, by weekly payments, great benefit will be afforded, and at a very slight cost in most cases. Sometimes pecuniary charity is mixed up with these societies, which consist partly of honorary members subscribing a certain annual sum for which they receive no return, and partly of those who participate in the objects of the institution by the payment of a weekly subscription. These are most valuable methods of doing good, if properly conducted, and afford opportunities for cementing that good-will among men which is a principal object in view. The following may be considered the most advantageous modes of carrying out these principles, which may be comprised under the heads of—1st, sick clubs; 2nd, burial clubs; 3rd, clothing clubs; 4th, coal clubs; 5th, insurance societies; and, 6th, schooling payments.

1903. UNDER SICK CLUBS may be included all those in which a weekly or monthly payment is made in order to procure medical assistance in case of illness. The rate of payment for sickness alone is, on the average, about 1d. per week per head, which sum will procure attendance and medicines within any moderate distance of the house of the club-doctor. The disadvantage is, that he is not always the person in whom confidence is placed, and without this, medicine is completely useless. It would be much better to arrange so that an order for relief might be given in case of sickness, which might be handed to any medical man selected by the patient, who would receive it as a payment for his services. Few would refuse to do this, because the usual medical attendant would generally be selected, and he would prefer a partial and small payment from a club to an uncertain one from his patient, or to losing the family altogether. If this plan were adopted, I believe that such clubs would be made much more generally beneficial than they now are, and the medical officer would be led to attempt to please the subscriber instead of currying favour with the officials, as is now so generally done.

(*a*) SELF-SUPPORTING DISPENSARIES are in principle of the same nature as sick clubs, except that the patients must attend at the dispensary, instead of going to the house of the "club doctor." In urgent cases they are visited at their own homes, so that there is little or no difference between the two, and substituting one name for the other, with the addition of a building, called "a dispensary," is all that is necessary to convert a "sick club" into a "self-supporting dispensary."

(*b*) If the poor could be assisted in getting genuine drugs at a low price, they would be benefitted most considerably. Many druggists of respectability would do this, if it were made a certainty, by guaranteeing a large amount of subscribers. The poor are constantly imposed upon in consequence of their custom being thrown into the hands of unprincipled persons who undersell one another, and lead their customers to believe that they are vending them genuine articles, when the fact is that their virtues, if ever they had any, are gone, having been extracted, and sold in the shape of "extracts," leaving only the useless envelope behind. The poor have seldom any difficulty in getting gratuitous advice, but this is often rendered inefficient, because the medicines they obtain are worthless, or else they are beyond their reach from their high price.

1904. Burial Clubs, in principle, are highly meritorious; but they appear to lead too often to deception and crime. Still the abuse in this case, as in all others, ought not to forbid the proper use of the practice, which appears to sustain the self-respect of the poor more almost than any other means. Many a man who receives medical relief from the parish would shrink at the idea of a parish burial; and this is scarcely to be wondered at, when we see how these things are often conducted. Burial clubs should themselves see to the payment of the expenses, which would do away with all temptation, since it is the fingering of the cash which is coveted, and not the death of the individual without this accompaniment. The great error is in agreeing to pay a certain sum on the death of A or B. It is easy enough to guarantee a respectable funeral of a certain class, and even to allow the survivors to select the undertaker, who should, however, be paid by the officer of the society; and with this safeguard, I believe, few of those horrible crimes would be committed which have lately been so often brought to light.

1905. Clothing Clubs are almost equally valuable with sick clubs, because good clothing is often a preventive of sickness. and as we know that "prevention is better than cure," so the means of attaining preventives are superior to those which will remove an evil. Shoes are especially valuable to the poor, and, being expensive, they are more difficult to obtain than other articles. Those who take an interest in the poor, will therefore do well to encourage these provident measures, by adding to the weekly sums collected, and thus affording a most effectual temptation to good habits. The following rules and regulations of various clothing clubs will, perhaps, be useful to those who wish to establish such societies.

(*a*) Rules of a Country Shoe Club.—A child paying a penny weekly receives the addition of one shilling; and when the money paid up, with the addition, is enough to pay for the shoes or boots, the order for them may be given. If for four weeks the child neglects to pay, the money is returned without any addition.

(*b*) A Rural School Shoe Club.—A child paying in a *penny* or more weekly, receives at the end of the year a halfpenny bonus for *every week* he has been at school, which ensures regular attendance. The shoes are ordered at the end of the year by the manager, or at other times if he thinks necessary.

(*c*) Rules of a Rural Provident Clothing Club.—The money is called for once a fortnight, and to every 6d. advanced a bonus of 1d. is added, and the same bonus of 1d. if the sum paid be 1s. or 2s., or more, each fortnight; if less, the proportion of 1d. to every 6d. is still the bonus given. Patterns of clothing, blankets, &c., are shown to the contributors in December, when the club account is closed, and they may avail themselves of the opportunity of purchasing, or receive a *part* or the *whole* back in cash. If from any circumstance a contributor wishes to withdraw his money before the end of the year, he does so without any addition.

(*d*) Rules of the London Society for the Encouragement of Industry:—

1. That the work provided by this society consist of useful articles of apparel for the poor.

2. That the purchasing of materials and cutting out of clothing be entrusted to the members of the committee.

3. That the work be given out every Monday morning during the months of November, December, January, February, March, and April, between the hours of eleven and half-past twelve o'clock, by the members of the committee, who will attend for this purpose at ———, and for the sale of the articles made; all articles to be paid for at the time of purchasing.

4. That each subscriber receive the amount of subscription in work tickets of the value of 1s. each, a guinea entitling to twenty-one tickets, and higher or lower amounts in the same proportion—such tickets not being available after the expiration of the year during which they were issued.

5. That each subscriber be responsible for the amount of work given out by their recommendation.

6. That subscriptions be collected in January; but that tickets may be had on application at the sale-room any Monday when the work is given out.

7. That no poor woman shall be allowed to receive more than two tickets in one week.

8. That the society be conducted by a treasurer and committee of six or more ladies.

(*e*) Rules of a Ladies' Dorcas Society:—

1. That the object of this society be to supply the industrious poor with ready-made articles of clothing at half the cost-price of the materials.

2. That a subscriber of 5s. annually shall constitute a member, and entitle the subscriber to two tickets, value 2s. each, and so on in proportion to the amount of the subscription. Donations, and one-fifth of the subscriptions, to be spent in putting out some of the needle-work to the poor, after

the expenses of printing, tapes, buttons, &c., are defrayed.

3. That a sale be held at the commencement of winter in each year, when any poor woman bringing a ticket will be allowed to purchase clothing to the amount of 4s. on payment of 2s. No person will be allowed to receive more than one ticket.

4. That the secretaries purchase all materials, receive and pay all monies, and superintend the sale; and that every member of the committee assist in preparing the work, and attend the sale.

5. That every article be ticketed with its real value, and that every purchaser be required to show the article she has bought to the subscriber who gave her the ticket. That no household servant be allowed to receive benefit from this institution.

6. That *private* work be solicited during the six working months, by the committee and visitors, as a means of promoting the great object of the society, which is "*to give employment to the deserving poor;*" and that such *private* work be distributed, as a reward, amongst the *best* workers; and that during the summer months the best needlewomen should be recommended to ladies for needle-work, &c.

1906. COAL AND GENERAL PROVIDENT CLUBS are conducted upon the same principle of adding to the deposits certain sums, varying with the locality, and the means of the honorary supporters.

(*a*) RULES OF A PROVIDENT CLUB:—

The depositor has a card; the manager a book. The deposits are paid in every Monday.

The depositors pay in as much as they please.

Twopence in the shilling interest. Not more than 2s. 6d. interest given to any depositor, whatever he may have deposited.

At Christmas, orders given to the full amount, interest included, on any landlord or tradesman that the depositor pleases; but he must be a *subscriber*. When the depositor requires his *money in cash*, either during the year or at Christmas, no interest is given.

(*b*) COAL may be stored up and sold at a reduced price weekly or once a fortnight, allowing only a certain quantity to be bought by each family.

(*c*) BREAD also, in hard times, may be sold at a reduced price, one or more loaves, according to the size of the family.

(*d*) SKIM-MILK, or SOUP, sold to the poor at from a halfpenny to one penny per quart, is a great boon, and may be given in charge to some respected individual to distribute, who would receive a penny in each shilling, or some other remuneration for his trouble.

(*e*) SUPERFLUOUS DRIPPING, if not given amongst poor families, may be sold to them as a great boon at fourpence or fivepence per pound.

(*f*) VILLAGE HORTICULTURAL SHOWS are an excellent means of encouraging the cultivation of the cottager's garden.

(*g*) SAVINGS' BANKS are so well known, that no comment need here be made.

1907. SCHOOLING CLUBS, like the others, depend upon weekly subscriptions, aided by assistance in proportion to the regularity of the payments, and also of the attendances.

(*a*) In regard to the nature of schools adapted for the poor, it appears to me that the Industrial School established by Mrs. Guthrie, at Calne, is of a very valuable nature, and likely to be of far more service than one which merely teaches reading and writing, or than those which profess to go much further in mental education. The following is a short account of the Calne Training Institution for Young Girls, established in 1849, being an extract of a letter addressed by Mrs. Guthrie to a lady in the neighbourhood:—

"Our purpose is to order the household rather as a *family* than a school. The girls in turn (two or three together) take their share in the various domestic occupations, changing their work every fortnight. All the cooking in the house is done by them; they make their own bread, but do not bake at home, as it is found more economical to send it to a bakehouse close by. Several girls are employed in the washing and laundry department, from which we derive considerable profit, and have ample employment given us from various parts of the country. The girls are entrusted with the fetching and taking home the linen, and in other little commissions; this is purposely allowed, that they may have the benefit of sufficient exercise, and may acquire habits of punctuality and responsibility. I will just give you an idea of one day's routine. The family all rise at six o'clock, or a little later in winter; breakfast at eight; then prayers and reading some portion of the Bible occupy them till a quarter past nine; they then disperse to their work; at half-past one they dine; we give them pudding and meat every day, either roast or boiled, or in a stew; in winter we occasionally give them soup; one mug of beer is allowed to each girl; after dinner they resume their work till tea-time; at six o'clock, if all is properly finished, they may sit down and work for themselves till half-past eight; then prayers, and to bed at nine. This is a sketch of the usual routine of one day's employment. One evening in the week is devoted, from seven to nine, to writing and arithmetic and Bible instruction, in which we are kindly assisted, generally, by the curate or his wife or sister, and on Sunday the young people attend a Bible class for two hours between the morning and evening services of the church. We do not profess to give a school education, considering that at the age of fourteen sufficient book learning either is or ought to have been already acquired *at school* for all practical purposes; but our chief object is rather to attend to their *industrial training*; the moral and religious education we consider as best carried forward in the routine of industrial occupation. A medical gentleman in the town kindly gives us the benefit of his professional skill and medicine gratuitously. At so early an age we do not attempt to send out finished or experienced servants, but rather to teach them how they may become so; to do more than this would be to attempt an impossibility; and it is a great point gained to see clearly what you can and what you cannot do. Our desire is to establish these young people in habits of cleanliness, truthfulness, and industry; teaching them the rightfulness of obedience to their superiors, and of mutual forbearance and kindness to each other, and self-respect; the fear of God being placed as the foundation for the due discharge of every duty; and we trust and hope that many a young person thus trained, and having also learned the rudiments of household work, will leave this institution, not only prepared for domestic service, but also to be a valuable and useful member of society, whether in the capacity of servant, wife, or mother. In the course of our work we have met, as might be expected, many hindrances, and some disappointments, from various causes within and without; but neither Mr. Guthrie nor I have any hesitation in saying that there is no part of our parochial labour on which we can look with greater comfort and gratitude. Very encouraging is it to observe the marked improvement in manners, appearance, and general conduct of the girls from its first commencement; and it is with deep-felt pleasure and thankfulness of heart, that after passing through streets where too many idle young persons, of both sexes, are seen learning and practising evil, we enter this house where peace and order seem to reign, where cheerful honest faces gladly welcome us, where sheltered from the dangers without, and led to seek for strength where strength alone can be found, many a young person we hope will here be taught to refuse the evil and choose the good—to learn the value of self-exertion, and the respect and reward that accompany honest industry. Each year we have had some candidates for confirmation, and on the last occasion, April 24th, twelve young persons from our number were presented to the bishop. Now you will see, my dear Mrs. Fowler, that we do not profess or attempt anything very difficult or uncommon, but merely to supply a deficiency which every one acknowledges, in the hope that others may be induced to do the same from finding how possible and practicable is such an undertaking. In regard to the questions you asked me as to the numbers we have had in training, and how many we have sent to service, I reply, we have had up to this day, May 4th, fifty-one girls under our care; twenty-five have been placed in respectable situations, where they still continue, and I am thankful to say I receive from time to time cheering reports from most of them, or from their mistresses. I have eighteen in the institution now, and one or two bespoken as soon as I consider them qualified to leave, and several are waiting, in the hope of being admitted. Some ladies of rank and influence in the country having promising girls in their schools, in whose welfare they take an interest, have placed them with us; and what is still more encouraging, these ladies have received into their establishments young servants from our institution."

STATEMENT OF EXPENDITURE AND RECEIPTS FROM JULY, 1852, TO JULY, 1853.

EXPENDITURE.	£	s.	d.
General expenses	252	1	1
Salaries—Matron and assistant	40	0	0
	£292	1	1

RECEIPTS.	£	s.	d.
Subscriptions and donations...	290	16	7½
Deficiency	1	4	5½
	£292	1	1

1906. INSURANCE SOCIETIES are now becoming much more common among the poorer classes than formerly, but they can scarcely be considered applicable to those for whom these remarks are intended. Few of these societies will receive less than 6d. per week, as the cost of collection would swallow up too much of the sums paid. When, however, the wages of a labouring man are high enough to warrant the payment, they are very valuable means of securing to his wife a fixed sum on his death.

or, in some cases, on his arriving at the age of sixty or seventy. Or if a visitor or a neighbour will undertake the collection of the weekly sums, and pay them over to the society yearly or quarterly, a great saving is effected, inasmuch as it is always necessary to raise the premium to be paid in proportion to the frequency of its time of payment. In some insurance societies, a provision is made for the withdrawal of a part of the premiums paid without losing the good effects of the policy, but charging interest upon the sum so withdrawn which must be added to the premiums when paid in future. In this way, there is all the benefit of a sick club, without the expenses too often attendant upon that method of insuring against death or sickness, while, at the same time, a provision is made for the survivors in case of an early death.

BOOK XII.

THE DOMESTIC TREATMENT OF DISEASE.

CHAP. I.—OUTLINES OF GENERAL PATHOLOGY.

Sect. 1.—Definition of Terms.

1909. The Term, Pathology, in plain language, signifies the science treating of those alterations in the body which accompany disease, and which may be evidenced by SYMPTOMS during life, or by MORBID APPEARANCES after death. Disease is the opposite condition to that state of health in which all the functions of the body are carried on in such a vigorous and natural manner, that the duration of life allotted to the individual is not likely to be shortened, except from accidental causes not then in existence.

1910. Symptomatology is the science which treats of symptoms, and is the most valuable portion of the healing art, being the result of careful observations made upon individuals in a state of disease. by comparing their manifestations with those of healthy persons, and others in a similar condition. When a series of symptoms are found to occur nearly in the same order, in a number of cases, a particular disease is said to exist, and a name is assigned to it by the physician or surgeon. The collection and classification of these groups of symptoms so named is called Nosology.

1911. Morbid Anatomy, sometimes called PATHOLOGICAL, describes the appearances found in the dissection of individuals who have died of or with a recognised disease. Like Nosology, it groups together their appearances, and endeavours to explain their exact nature and bearing upon the life and death of the subject of them.

1912. By the Term, Medicine, we understand three distinct things—1st, the science which treats of the cause and nature of diseases; 2nd, the art of curing them; and 3rd, the agents (medicines) which are used for the purpose. In the more usual and limited signification, as applied to the first and second of these, it is confined to those diseases which affect the internal organs, leaving the remainder to the domain of Surgery, which also has its principles as well as its practice, and of which the remedial agents are partly the various medicines used in surgery, and, in addition, those numerous operations practised on the body, with a view to remove disease, or the effects of accident.

1913. By Therapeutics, we mean the science treating of the various remedial agents used in the removal of disease, or in its prevention. These are also described under the terms, Materia Medica, Hygeine, &c.

Sect. 2.—Examination of Symptoms.

1914. General Remarks.—Under this head will be comprised an account of the chief signs or symptoms by which diseases may be recognised, such as the pulse, tongue, state of the secretions, &c.

1915. The Condition of the Circulation is affected by all acute diseases, and by many chronic evils also. The change from a state of health may be ascertained either by feeling the pulse, or the beating of the heart, or when blood is drawn, by examining into its composition. The constituents of healthy blood have been already given at page 428.

(*a*) When Blood drawn from a Vein is allowed to stand in a moderately deep vessel, such as a pint basin, it separates into the clot and serum, as shown at page 428. In a state of inflammation, this clot is concave, or *cupped*, and its surface has lost its red particles by their rapid subsidence, so as to present a yellow or *buffed* appearance. Sometimes both these characters are presented together, and then the blood is said to be *buffed and cupped*, which, though not by any means an infallible sign of inflammation, is *primâ facie* to be taken as a proof of its existence.

(*b*) If the Hand or Ear is applied to the region of the heart, the number of its beats can readily be counted, and to a certain extent the force with which it contracts can be estimated. In this way the number. power, regularity, and perfection of its beats may be ascertained. But farther than this, if the fingers are applied to any artery, the pulsation felt will indicate the quantity of blood sent forth at each contraction, and also the state of the artery itself in point of irritability. The arterial pulsations may be examined either at the wrist, or at the temple, or in the throat, or sometimes in the leg; but the most common situation for it is the wrist, where *the pulse* is said to be situated, and its examination is commonly called "*feeling the pulse.*" But for ascertaining the condition of the circulation of the brain, the examination of the carotid artery on each side the wind-pipe is the best means afforded.

(*c*) THE PULSE is felt by the four fingers applied to the artery at the wrist, either in such a way that all may feel its impulse, or that one may make pressure while allowing the others to ascertain the effects of it. This symptom has not the degree of certainty attached to it which is generally supposed by those out of the profession, but nevertheless it affords very great aid in deciding upon the amount of disturbance in the circulation. Much of this uncertainty depends upon too great a haste in the examination; but this is more likely to occur to the medical attendant than to the domestic inspector. In many persons of a highly excitable, nervous temperament, even the act of feeling their own pulses increases the action of the heart; and if a mother or a husband should do such a thing, the effect would be nearly equal to that produced by the visit of a medical man. In young children it is sometimes very difficult to count the pulse at the wrist from its great frequency, and in them the heart itself is the best place for the examination. Sometimes also at the wrist there is a want of correspondence with the action of the heart, from the force being lost, or from the heart having no blood to act upon, owing to disease of its valves; or sometimes, again, there is a disease, such as a tumor, in the course of the artery to the wrist; whilst, lastly, in the case of a very active inflammation going on in the hand, the pulse at the wrist may be much more powerful and jerking than natural, and would indicate an amount of local disturbance which, if general, would be very serious. With these exceptions, the pulse may be taken as a tolerably sure symptom indicating the condition of the general circulation.

(*d*) THE PULSE, then, as a general rule, indicates the *number* and *regularity* of the heart's contractions; also the *quantity of blood* expelled by the heart, and the degree of *reaction upon it* of the arteries.

(*e*) THE NUMBER OF CONTRACTIONS is marked by the beats during the minute, as examined by the watch. On the average, these vary from seventy-two in the healthy man, to half or double that number in a state of disease. For the healthy woman eighty may be considered as the average, in the new-born infant it is one hundred and thirty-five, and at one year old about one hundred and twenty-five, gradually being reduced in frequency to the number specified as that of the adult.

(*f*) THE REGULARITY depends entirely upon the heart; and according as its mechanism is more or less perfect will the pulse be regular, irregular, or intermittent, which last feature is due to the heart omitting a beat in its regular turn, from defect in the supply of blood, or some other cause, almost always connected with organic disease.

(*g*) THE QUANTITY OF BLOOD expelled is indicated by the largeness or smallness of the artery, the pulse being in the one case said to be full, and in the other small.

(*h*) THE DEGREE OF REACTION in the arteries is measured by the hardness, incompressibility, or wiriness of the pulse, indicating an increase of elasticity; while, on the other hand, a soft and yielding pulse marks the opposite condition. When the large arteries have lost their tone, the pulse has a peculiar *thrill* or *vibration*, which is very remarkable, and indicative of certain diseases.

1916. The preceding characters of the pulse are rarely met with singly, but are united together in various combinations, the chief of which are enumerated below, with the diseases indicated by them.

(*a*) WHEN FREQUENT, LARGE, AND SOFT, it indicates the early stage of fever, or of acute inflammation, as in scarlatina, erysipelas, inflammation of the lungs, &c.

(*b*) WHEN VERY FREQUENT, LARGE, AND HARD, it accompanies the full onset of fever of an inflammatory kind, such as rheumatic fever, small-pox, &c.

(*c*) A MODERATELY FREQUENT, LARGE, AND HARD PULSE may be that of mere fulness of blood (plethora).

(*d*) WHEN FREQUENT, HARD, LARGE, AND THRILLING, there is generally some disease of the artery, or in its close neighbourhood, such as aneurism or tumour.

(*e*) A FREQUENT AND SMALL PULSE is often met with in consumption or anœmia, in which the quantity of blood is diminished, and is equally impaired.

(*f*) A SLOW, LABOURING, LARGE, AND HARD PULSE is often attendant upon apoplexy, or other forms of pressure on the brain, such as hydrocephalus, or mechanical depression of the skull, or as the effect of some of the narcotic poisons, including alcohol in all its forms.

(*g*) THE IRREGULAR OR INTERMITTENT PULSE indicates either valvular disease, or a want of muscular or nervous power, or sometimes a defect in the supply of venous blood from the body, or of arterialized blood from the lungs, accompanying in the former case disease of the liver, or in the latter, of the lungs.

1917. The state of the circulation in the veins and small vessels (called capillaries) is also to be considered as symptomatic of health or disease. Thus, supposing the cheeks or lips to be blue, or the skin generally to be of that colour, it is reasonable to conclude either that the circulation is impeded in the lungs or heart, or else that the capillaries fail to carry on their part of the circuit. The former is readily detected by examining those organs, but the latter can only be guessed at from a knowledge that in the absence of the former it is the sole cause of the obstruction. Sometimes a pulse is observed in the veins of the neck, which is a sign of defective action in the valves of the heart.

1918. THE RESPIRATION is another part of the animal economy which affords symptoms by which the state of the body may be estimated. The whole act is compounded of two portions, consisting of an inspiration and an expiration; and when we speak of the number of respirations per minute, we mean the number of each of these actions. Respirations vary in *number*, *fulness*, *freedom from noise* or the reverse; and in *absence from pain* or the reverse.

(*a*) THE NUMBER OF RESPIRATIONS PER MINUTE may readily be counted, either by placing the hand on the chest or on the abdomen, *unobserved by the patient*. The number of respirations varies greatly with the age, and even with the sex, and also with the posture, whether standing, lying, or sitting. The following table indicates the extreme fluctuations at the several ages, the average being ordinarily between the two extremes here indicated, and all being taken in a state of health:—

TABLE OF THE NUMBER OF RESPIRATIONS PER MINUTE.

Age.	Number of Respirations.		
1 Week	25	to	70
1 Year	20	,,	45
5 Years	18	,,	30
15 ,,	15	,,	25
21 ,,	14	,,	22
30 ,,	10	,,	20

Sleep lessens the number of respirations, and increases their fulness, while active exercise increases their frequency and also their fulness.

(*b*) THE FULNESS OF THE RESPIRATION marks the capacity of the lungs, which may be either naturally incapable of admitting a large volume of air, or rendered so by disease, such as consolidation from inflammation, or by the deposition of tubercles. This symptom may be roughly measured by putting one hand on the chest and the other on the back, and by those means ascertaining the increase in the space between them, which marks the volume of air inspired. Various instruments have been devised for the purpose; but for domestic use this mode is quite sufficiently accurate; indeed, it is not often that this symptom is required to be taken into the account by any non-professional person, though of the highest importance to form a correct diagnosis.

(*c*) When there is a complete freedom from noise in respiration, it may generally be assumed that no great amount of mischief is going on; though this rule is not to be taken without limitation; since in some cases, such as pleurisy, or in bronchitis without secretion, there will be to the uneducated ear very little noise to be heard. On the other hand, if the examiner will put the ear on the naked chest, and can detect a rough grating sound, or a crackling, or hissing, or bubbling, it may be assumed that active mischief is present, requiring the immediate attention of the professional adviser.

(*d*) If after taking a full inspiration pain is felt, there is generally inflammation of some part of the contents of the chest, though sometimes it may be only of the muscles between the ribs. Nevertheless, when this symptom occurs it is high time to seek further medical advice.

1919. THE TONGUE may be taken next to the state of the pulse and respirations, as a guide to the condition of the *stomach and bowels*, as well as indicating the *presence or absence of fever*, or of *general nervous irritability*. But it cannot be considered as by any means a certain test, inasmuch as though it generally indicates certain states by corresponding appearances, yet sometimes these conditions are not accompanied by any change at all in this organ. In many families, I have seen all kinds of inflammation and disorders of the digestive organs occur without the slightest coating of the tongue, but in all such cases there was a change of some kind, which would mark the precise disease going on, though in a different way to that observed in other people suffering from the same disease. To those, therefore, who had previously watched these changes, the tongue would be still a sure guide, but to a stranger it would be a source of misconception, unless he were on his guard against it. Most people have a slight fur on the tongue on first waking in the morning, which soon goes off; and though they may not be in positively perfect health, yet it is so good as to be comparatively so. In some people it is always clean, but rather too red, and appearing as if skinned; in others it is always more or less covered with white fur. Again, it is sometimes firm and compact, and sometimes flaccid, and showing the indentation of the teeth. Lastly, it is protruded by some people in a point, sharp and round, while others spread it out in a thin flat layer—all these being indications which are noted by the practitioner of medicine. For the domestic observer, the following appearances may be considered as sufficiently precise and minute.

(*a*) When the Tongue is Coated with a brown and moist fur, without fever, or if without this accompaniment, it is thickly covered with a tenacious white fur, there is generally chronic disorder of the intestines and stomach, joined with constipation.

(*b*) If a Brown and Dry Coat exists with fever, there is evidence of a typhoid condition, or of some local irritation, producing irritative fever of a low character.

(*c*) In those Cases of Fever, where there is a moist and white fur, it *may* precede typhus, but generally the fever is of a rheumatic or catarrhal character, or symptomatic of some local inflammation, such as quinsy, or pneumonia.

(*d*) When there is a Bright and shining tongue appearing as if skinned, it may be only the ordinary condition peculiar to some people; or, on the other hand, it may be symptomatic of acute inflammation of the mucous membrane of the stomach or intestines. This last is generally the case when the front and sides are red and the centre furred.

(*e*) Indentations of the Teeth on the tongue mark a want of tone in the mucous membrane and system generally.

(*f*) A Trembling Tongue accompanying a moist, pale, yet tolerably clean surface, is a symptom of disorder of the nervous system.

(*g*) White Patches on the tongue and lips, with intervening spaces of a deeper red than usual, indicate the state known as thrush, very common among young children.

1920. The Gums and Lips are also useful as indications of certain conditions of the system.

(*a*) Swollen Gums, not readily bleeding, but receding from the fangs with a red edge bordered with white, and a peculiarly offensive breath, mark the condition produced by mercury approaching to salivation.

(*b*) When the Gums are Swollen, and bleed at the slightest touch, there is reason to believe that the system is generally out of sorts, in a state commonly called scorbutic.

(*c*) A Pale Bluish-red Gum, with a marked line of blue at the edge, is a sign that lead has been taken into the system in some way.

(*d*) When the Lips are Parched and cracked, with fœtid breath, there is reason to suppose that fever runs in a typhoid type, though this is by no means a certain sign by itself.

(*e*) An Herpetic Eruption on the Lips indicates disorder of the digestive organs with that form of feverishness accompanying catarrh.

1921. The Appetite for Solids and Fluids varies greatly in certain diseased or disordered conditions. Thus, loss of appetite, accompanied by thirst, is an almost invariable attendant upon fever of all kinds. If the appetite is good, and there is an absence of thirst, the disease, if any, is generally of a chronic nature.

1922. The Symptoms Affecting the Stomach, are—vomiting or nausea, flatulence, pain after eating, and, in some cases, eructations of a watery fluid in large quantities:—

(*a*) Vomiting accompanies inflammation of the mucous membrane of the stomach, whether of a simple character or produced by organic disease. It also follows injuries to the head, or any severe shocks to the nervous system. It is a never-failing symptom of gall-stones, and in most cases of inflammation of the kidneys. In pregnancy there is generally more or less of this symptom. The matter vomited may be food more or less digested, or mucus, or clear liquid, or bile, blood, matter, or even fæces when there is any absolute obstruction to the natural passage. The blood vomited is almost always of a dark chocolate colour. Nausea is merely a tendency to vomit without any actual relief of the stomach.

(*b*) Flatulence is a symptom of disordered stomach of a chronic character, the gas being evolved by the fermentation of the food; but, in some cases, being secreted by the membrane of the stomach itself.

(*c*) Pain after Eating is also a sign of disordered stomach, but there is generally inflammation accompanying it.

(*d*) The Eructation of a Watery Fluid is peculiar to that state of the stomach known as water-brash.

1923. The Bowels present the following symptoms when disordered:—

(*a*) Constipation may arise from torpor of the bowels owing to long-continued neglect, or the absence of aperients, or other causes, or from a defective secretion of their natural stimulus, the bile; or, lastly, from mechanical obstruction.

(*b*) Diarrhœa consists in an increased discharge of liquid fæces, either caused by the irritation of food or medicine, or the presence of hardened fæces; or sometimes from a poison, such as cholera.

(*c*) The Healthy Discharge from the

BOWELS may be almost of any consistence, so that there is neither mucus nor watery fluid, and that the colour is of a good brownish yellow, resembling gingerbread.

(*d*) **UNHEALTHY DISCHARGES FROM THE BOWELS** may be of ill-digested food, or mucus more or less stained, or of shreds of lymph, or matter, or blood, or sometimes of almost pure bile. The first-named of these may be without any bile, when the fæces are of a pale-clay colour, or overloaded with it, and then green or dark olive. If the blood flows from the small intestines, the discharge is thick, tenacious, and pitchy in appearance; but if from the lower bowels, it resembles blood drawn from the veins, being generally from hœmorrhoids. Small lumps, mixed with mucus, are termed *scybala*.

1924. **THE URINE** is of great importance in distinguishing the several diseased conditions.

(*a*) **HEALTHY URINE** recently passed, is of the temperature of the body, perfectly transparent, and of a light amber colour, with a peculiar odour, and a taste partly bitter, and partly saline. When cold the sense of smell detects very little or no difference from pure water, until decomposition takes place, when ammonia is evolved in large quantities. The specific gravity ranges from 1005 to 1033. There is a slight acid re-action on litmus paper, turning it pink. The chemical constituents are, on the average, as follows, varying greatly in their proportions:—

Urea	25
Uric, or lithic acid	1
Fixed salts	15
Organic matter	10
Water	949
	1000

(*b*) **THE QUANTITY VOIDED IN TWENTY-FOUR HOURS**, during a state of health, varies very greatly in different persons and at different times; but about two imperial pints, or a little more, may be considered as the average, according to the experiments of Prout, Christison, Simon, and others. In proportion to the increase of perspiration, or liquid discharge from the bowels, will the urine become more and more scanty, and *vice versâ*. It is from this cause larger in quantity in the winter than the summer, or at all events in a cold rather than in a hot atmosphere. It is also greater during the day than at night, and in the morning than in the evening. Besides which causes of increase and diminution in health may be enumerated excitement and anxiety of mind.

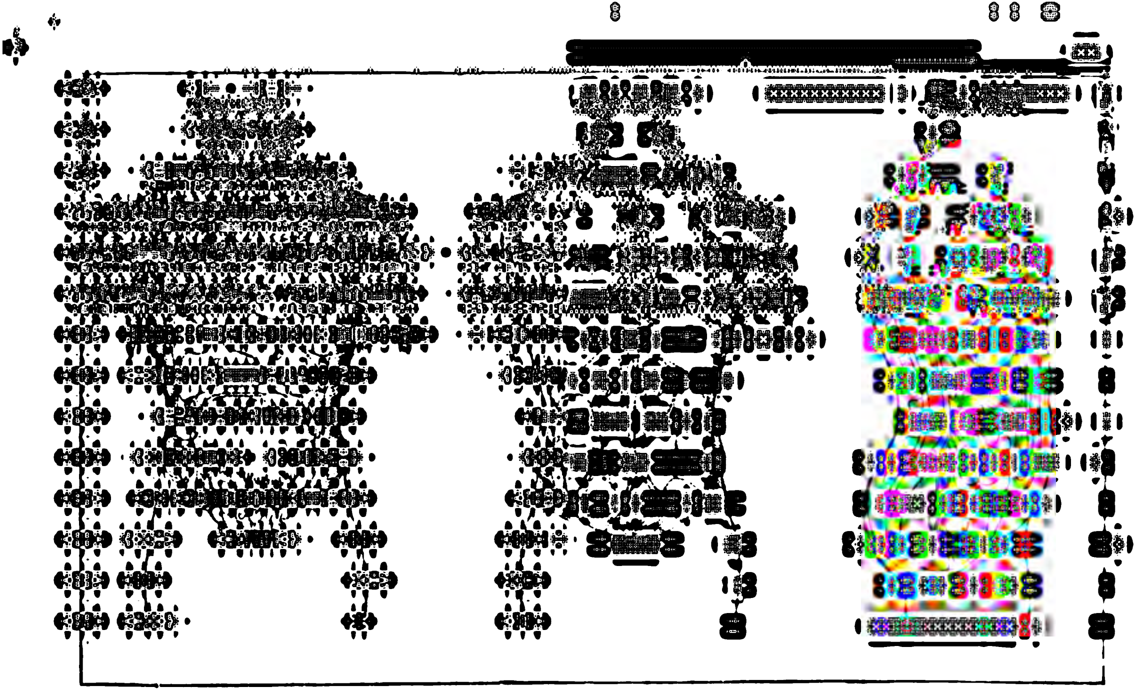
(*c*) **IN DISEASE THE QUANTITY OF URINE** is increased when the lungs and skin do not properly perform their office, excepting when fever locks up this secretion as well as all others. Strong nervous paroxysms, or those of hysteria or hypochondriasis, or intermittent fever, produce a discharge of large quantities of limpid and pale urine, the saline and organic matters being then generally healthy, but diluted with too large a proportion of water, sometimes to the extent of thirty pints daily. Occasionally without actual disease of the kidneys the quantity of urine is increased with excess of urea; but if sugar is present they are more or less affected, constituting a peculiar disease known by the name of *diabetes mellitus*.

(*d*) **THE DENSITY OF THE URINE** in disease may vary from 1000 to 1055, and as it has been remarked before that the healthy range is from 1005 to 1033, it follows that any density below or above these numbers is a sign of disease.

(*e*) **THE URINE SECRETED AFTER SOLID FOOD** is very different from that passed with a stomach full of liquids. In the former case the quantity of urea is twelve times as great as in the latter, while the salts are four times as voluminous.

(*f*) **THE COLOUR** is high when the urine is scanty, and pale when in large volume. That passed in the morning is usually darker than the water passed in the after part of the day. When turbid and white, or bluish-white, there is present either chyle, milk, mucus, or pus, or some of the earthy phosphates in excess. When deep yellow or yellowish-green, it is coloured by bile or cystic oxide. A dark-red or purplish colour is given by an admixture of the purpurates or by inflammatory disease; and a yellow-red in hectic and the sweating stage of intermittent fever; while a brownish or cherry-red is due to the red particles of blood floating in it. Brick-dust colour is derived from the presence of lithate of ammonia, which is only thrown down after it becomes cool. A smoky colour, approaching to chocolate, is the result of bleeding into the kidneys; while a decided black is only produced by a peculiar disease called melanosis. Besides the above causes of the change of colour resulting from disease, several others are met with as the effect of food or medicine. Thus, rhubarb gives a brownish-red colour, madder and beet-root a brighter red, and corn-poppies and logwood one of a more purple cast.

(*g*) **THE NATURAL ODOUR OF THE URINE** is absent when it is very pale, and in large quantities, while it becomes very rank



RELATIVE SITUATION OF THE ORGANS OF THE HUMAN BODY.

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when scanty, or in certain diseases of the bladder. Various articles of food and medicine effect this quality, such as asparagus, copaiba, &c. It becomes aromatic in some nervous disorders; ammoniacal in injuries of the spine, or in diseases of the bladder; putrid, from the presence of pus, mucus, or blood, and sometimes also in putrid fevers; and sweetish in *diabetes mellitus*.

(*h*) The further description of the chemical constituents of the urine, and the tests for them, are not suited to any but those who are proficients in chemical science.

1925. In order to give some idea of the situation of the chief organs of the abdomen and chest, three plans are annexed. *Fig.* 181 shows a front view of the organs of circulation, respiration, and digestion; (A A) being the lungs, (B) the heart, (C) the stomach, (D) the liver, (E E E) the small intestines, surrounded by the large intestines (F G H), which commence in the right groin (F), and passing under the edge of the liver and stomach at (G) descend on the left side at (H) to pass out of the body below. *Fig.* 182 gives a back view of the same organs, showing the lungs (A A) reaching much lower down behind than before, with the large vessels lying close to the backbone. Beneath these are the liver and stomach, marked by the same letters as before; and opposite the middle of the back are shown the kidneys (I I), with the large intestines occupying the spaces below them on each side. With this guide, the parent may form some idea as to the organ which is suffering from disease, when pain is referred by the child to any particular part. *Fig.* 183 is added, in order to give a side view or section of these several parts; the same letters being attached to each as before, with the addition of the bladder (J), the rectum (K), the commencement of the small intestines, called the duodenum at (L), and the pancreas (M).

1926. **The State of the Skin** may be considered as symptomatic of various diseases. Thus, when hot and dry, there is fever, which is generally high in proportion to the temperature of the skin. When cool and moist, it may almost always be asserted that there is no fever present. A cold, clammy, and moist skin sometimes exists with a tolerable degree of health; but it also indicates many severe diseases, and is frequently a precursor of death. Many eruptions are indications of peculiar general diseases, such as those accompanying small-pox, scarlet-fever, measles, &c.; while in other cases the skin seems to be the sole organ affected, as in leprosy. In chronic skin affections there is, however, as a rule, more or less disorder of the general system; but this is too wide a subject for discussion in this book.

(*a*) **The Colour of the Skin** is indicative of various conditions. Thus, a florid and rich complexion shows high health, when unaccompanied by a turgid state of the vessels. If the skin is of a gamboge-yellow cast, the liver is not acting as it should do, though this shade is often confounded by inexperienced persons with the tanning effect of the sun. When the skin is bloodless, and the lips are white, the blood is generally too watery, or deficient in red globules. Many other slight differences of shade are only distinguishable by the practised eye.

1927. **The Expression of the Eye**, and of the whole countenance, affords an excellent index to the state of health or disease. When the eye is bright, but not too much so, high health is generally present. If languid, there is a want of tone; and, on the other hand, if excited and wandering, some affection of the brain may be predicted. The peculiar expression of countenance accompanying each disordered condition of the system cannot be adequately described, and must be seen in order to be known again.

SECT. 3.—CIRCUMSTANCES INFLUENCING DISEASE, AS AGE, TEMPERAMENT, SEX, &C.

1928. **Age** has an important bearing upon disease, beginning with the gradual, and often imperfect, establishment of respiration at birth, requiring extra care in warmth and clothing, and passing on through the phases of teething, the development of the organs of nutrition and reproduction at the respective ages of childhood, puberty, and manhood, and, lastly, the decline in the activity of all the organs in old age. These facts are now thoroughly recognised by the Insurance societies, who calculate from their large number of returns the exact value of life at any given age, and the proportion of sickness per cent., as well as the mortality.

1929. **The Temperament** also materially modifies all the functions of the individual, both in health and disease. Four temperaments are usually recognised—the *sanguine*, *bilious*, *nervous*, and *phlegmatic*; but they run into one another so as to produce various compounds.

(*a*) **The Sanguine Temperament** is marked by a full but not fat person, with considerable firmness of flesh. The hair has usually a reddish tint, if not actually red; the eyes are blue or grey; the complexion fair, with some degree of colour in it; and the skin thin and transparent, showing the blood-vessels clearly, which are large. The circulation is active, the pulse being full and frequent; the expression of countenance is lively and changeable, the movements of the body quick, the passions strong and readily excited, and the mind somewhat unstable.

(*b*) THE BILIOUS TEMPERAMENT has also a full and firm mass of flesh; but the outlines of the person are more abrupt, and the features are generally larger and more marked, with a more decided expression of countenance. The eyes are dark, as are also the complexion, and generally the hair. The large blood-vessels are full of blood, on the surface especially; but the capillaries do not display the red globules, as in the sanguine temperament, very probably owing to the darker shade of the skin, and the smaller proportion of capillaries in it. The pulse is full and firm, the character is energetic, and the passions are strong, with a much greater permanence in the mental as well as the bodily and manifestations.

(*c*) THE NERVOUS TEMPERAMENT is accompanied by a small and spare form, soft and slender muscles, but full of energy, and exhibiting much more power than they appear to possess. The features are delicate, the hair generally light, but sometimes dark; the lips slightly developed, and the eyes are vivacious, sparkling, and sharp; the pulse is small and rather frequent, being also easily affected by external causes. The mental phenomena are all of a high order, while those of the body, are generally the reverse.

(*d*) THE PHLEGMATIC TEMPERAMENT, sometimes called the LYMPHATIC, is marked by a soft and round volume of muscle, with the spaces filled with fat. The hair is rather light than otherwise, as also are the eyes. The skin is pale, the lips thick, and the face devoid of character and expression, though often well-formed in feature. The circulating system is not fully developed, the pulse being slow and languid, and all the functions of the body and mind are comparatively torpid.

1930. THE TERM, IDIOSYNCRACY, is adopted by medical writers for the same purpose as the word *nervous*, that is to say, in order to conceal ignorance, and to substitute a fine name for a confession of it. We find that, as a rule, certain medicines or articles of diet agree or disagree, but that in particular cases the rule is not carried out; why or wherefore we cannot say, but being unwilling to admit that we do not know, we say that the departure from the usual and customary result is owing to idiosyncracy. In some persons a very small dose of a medicine will produce an extraordinary effect, so that, for instance, a grain or two of calomel may produce violent salivation, and if the medical attendant informs his patient that it arises from an idiosyncracy on his part, he will perhaps be better satisfied with his lot than if he were informed that in some cases mercury had that remarkable effect, but that the reason for it was beyond the powers of man to divine. So, in other cases, fish or cheese, or mushrooms will disagree in a very alarming manner, still owing to *idiosyncracy*; while in a third set, medicines will have an exactly opposite effect to that usually following their exhibition. Thus, I have known opium act as a violent aperient, and in many cases aperients seem to have quite the contrary effect to that for which they are adopted.

1931. HEREDITARY PREDISPOSITION exerts a wide influence on the production of disease, few of us being descended from such a perfectly healthy stock, as to be entirely free from its operation. Most people resemble their parents in outward appearance, and from this it may be supposed that they will also receive an impress of the tendency to particular disease. This theoretical notion is practically found to be correct, for we are continually meeting with consumptive children, born of parents who have died of that disease; and the same is very remarkably shown in gouty and rheumatic constitutions. Scrofula, phthisis, gout, and insanity are always considered hereditary, to which may, in all probability, be added asthma, disease of the kidneys and liver, and, in a remarkable degree, that troublesome affection known as hæmorrhoids.

1932. EXTERNAL CIRCUMSTANCES influence disease almost as much as those attached to the individual, and, indeed, in some cases, even more so. Thus, there is a general type of disease which changes from year to year, the causes of which we know very little of, but in some cases we can perhaps give a guess at. Sometimes the prevailing type is caused by some general error in the management of children or grown people, which has been in existence for some years previously. This is well marked in the present day by the constant occurrence of disease of the heart and blood-vessels, with a general low type of disease and intolerance of blood-letting, as a consequence of the abuse of the lancet in the first quarter of the present century. So in the early part of this century, liver diseases were prevalent to such an extent as to make them what is called fashionable, that is to say, common; and this was owing to the abuse of calomel in the previous quarter, or the latter part of the eighteenth century. Confinement in school, with tight lacing, produces spinal disease, and so on, through a long series of fashionable or prevalent complaints, which are all more or less produced or modified by external circumstances, under the control of mothers of families. There is a very common complaint now prevalent among young ladies who are brought out into fashionable society, or into any society in which the dancing of the present day is indulged in, and which, I believe to be mainly owing to that exciting amusement when carried out as it now is, joined to late hours, and the erect position maintained by delicate frames for many consecutive hours. It often happens that mismanagement does not show its ill effects for many years, and even sometimes not until the next generation, when an unhealthy child, born of parents apparently in good health, is the consequence of such a proceeding. The state of the air, too, exerts great influence upon health; though here again it is difficult to understand the precise nature of the change, nor can it be foretold by any sign whatever. This condition is known by the term epidemic, which tells us nothing but the patent fact, and only serves instead of a long explanatory phrase. Nevertheless it is a fact, that there is some strange influence running through the world, and apparently conveyed by the air, which either produces or modifies disease in a most extraordinary way. This, however, is too fully known and recognised to admit of dispute.

SECT. 4.—STRUCTURAL CHANGES.

1933. THE ACTUAL CHANGES OF STRUCTURE going on in disease may, for general purposes, be enumerated as—1st, *those of the blood*; 2nd, *increase* or *diminution of nutrition* (*hypertrophy and atrophy*); 3rd, *absolute new growths*; 4th, *diseases of the skin*; and, 5th, *diseases of the nervous matter*, generally obscure.

1934. DISEASED CONDITIONS OF THE BLOOD, although now fully recognised as constantly occurring, and as being the foundation and cause of numberless diseases, are not readily proved by mathematical demonstration. But there is no doubt whatever, and indeed it can be readily shown, that in numerous cases the blood is too thick or too thin, or devoid of a proper quantity of red globules, or perhaps endowed with too large a share of them. These defects, however, are not of such fatal consequences as those which are not so easily recognised, such as the poisons of infectious diseases, or from the bites of snakes, or mad dogs, &c., all of which pass into the blood, and for the time enter its composition. Whenever, also, this fluid is too full of bile, or is not properly depurgated by the intestines and kidneys, it is rendered more or less unfit for the work which it has to perform in building up the machine and effecting the various secretions, and the consequences are lamentable in proportion to the extent of the mischief in itself.

1935. HYPERTROPHY AND ATROPHY are merely an excess or diminution in the natural powers of nutrition which reside in the small capillary vessels acting on the blood itself. Thus, an organ is over-stimulated from some defective condition of its nerves, and as a consequence of this its vessels nourish it too much, producing an increase of size or thickness, which may either extend to its cavity, if any, or not, according to circumstances. The heart is peculiarly liable to this disease, and indeed is the only one which suffers severely from it, owing to the peculiarity of its formation, which demands a machine perfect in its several valves, and easily deranged by having one part out of proportion with the rest, though in itself perhaps stronger and more healthy than before. On the other hand, a part sometimes wastes away from a defect in its nutrition, the stimulus not being sufficient to procure a proper supply of nutritious matter from the blood. This is called *atrophy*, a state which always exists to a greater or less degree in the muscles when not used, as in the bed-ridden, sedentary, or paralytic person. There is generally a great paleness in the muscles so affected, owing to a deficiency in the supply of blood to them. In hypertrophy, on the other hand, the red colour is rendered more marked. These states may affect muscle, bone, skin, fat, glandular structure, or, in fact, almost any organ of the body.

1936. NEW GROWTHS may be of various kinds, which are either of matters similar to those already existing, or of others different altogether. To the former belong deposits of lime, fat, coagulable lymph, cartilage, &c., in situations where they do not exist by nature, and where they are completely foreign bodies, and often of serious consequence to the due performance of the functions of the part. Thus, lime when deposited in the texture of an artery, is highly injurious to the elastic properties of its coats. Cartilage, again, is in some situations a very elastic and useful cushion, but in others it is an interloper, and acts prejudicially in various ways. Fat, again, on the surface of the body, is usefully employed as a means of keeping the interior warm, and also as a reservoir of heat-making material; but when interspersed among the muscular fibres it prevents their contracting with due force, and diminishes their power by one-half, or sometimes in a still higher degree.

(*a*) NEW GROWTHS differing from all

existing organs are called *heterologous*, in pathology, and consist of several, which scarcely admit of more than a rapid enumeration in this book. They are, again, subdivided into *malignant* and *non-malignant*, the latter comprising only *tubercles*; while the former comprehends the varieties of *cancer*, known by the names of *scirrhus*, *encephaloid disease*, or *medullary sarcoma*, *fungus hæmatodes*, and also of *melanosis*. All these several diseases, however, are beyond the province of domestic management, and can only be distinguished and treated with any chance of success by the experienced medical practitioner.

1937. DISEASES OF THE SKIN are almost all of them connected more or less with structural change; but their varieties are so great and so difficult to distinguish, that it is quite useless to attempt to teach any non-medical reader how to recognise their appearance.

1938. DISEASES OF THE NERVOUS SYSTEM are supposed, from analogy, to be accompanied by alteration of structure; but as yet little has been done, even with the assistance of the microscope, in detecting them. Cancer, tubercle, &c., may readily be seen when occurring in the nervous masses; but this is not what is meant, but rather those curious alterations which go on, accompanied with more or less disordered action of the nervous power, producing partial paralysis, or excessive sensibility, or spasms of the parts to which the nervous matter implicated is supplied. Softening of the brain and spinal cord (*ramollisement*) is a common structural change, and the word is in every body's mouth; but beyond this very little is known of the actual diseases and changes going on in the nervous system. In a natural state of the nervous system, there seems to be a peculiar tendency in the several parts to be affected by what is called *sympathy*—that is to say, when one part suffers another is influenced in the same way, and in disease this condition is often much more highly developed, producing what is called a *morbid sympathy*, but no structural changes have hitherto been detected.

CHAP. II.

GENERAL THERAPEUTICS.

SECT. 1.—GENERAL REMARKS.

1939. BY THE TERM THERAPEUTICS, we understand the science which treats of the cure or palliation of disease, whether by means of drugs, or surgical appliances, or diet, or in fact any other agent whatsoever. It is usual to class remedies for disease under the heads of medicines, medical hygiene and surgical appliances; and this method will be adopted here, omitting all remedies which are of such a dangerous nature as to be more than usually liable to abuse. It is notorious, that even those of the mildest kind may be used improperly, and indeed often are so; but as it is also evident, from constant experience, that mothers of families as well as fathers, and old maids and old bachelors also, will quack themselves, and their friends when they will let them, it is better to afford them sound and useful advice on the subject, than to leave them to grope their way in the dark; or to apply to those who are, perhaps, quite as ignorant as themselves, and not always quite as honest.

SECT. 2.—ON THE PROPERTIES OF MEDICINES, THEIR MODE OF OPERATION, AND THE DISEASES IN WHICH THEY ARE USED.

1940. REMARKS.—The following medicines are inserted as those least likely to abuse, and as serving all the common purposes of family use. Each will be introduced in alphabetical order, with its properties and effects given under the respective heads—(*a*) *Physical properties*, (*b*) *Therapeutical effects*; (*c*) *Use*; and (*d*) *Dose, and mode of administration*. Extracts, tinctures, and all such compounds as will bear keeping, and are likely to be useful in a family, are better when bought at a good druggist's than as made at home. They are therefore merely given without any directions for manufacture, especially as the druggist's price is now so low as to bring them within the reach of everybody.

1941. IN PURCHASING DRUGS, whether in a raw state or in the form of extracts, tinctures, &c., it is very important to obtain them from a respectable house, who will then always take care that the article is genuine and properly labelled. The adulteration of drugs is enormously carried on, and, as commonly sold, the strength is seldom above one-half of what it ought to be. Besides this, there is the danger of the substitution of a cheap drug for a dear one, as in cod-liver-oil, for which common fish-oil is often sold, or in that of quinine, which is replaced by salicine, costing less than a quarter of its price, and being almost valueless as a tonic. The public are therefore completely dependent on the honesty of the vendor, as of course they cannot be supposed to be able to distinguish for themselves between good and bad drugs, nor even can they tell one kind of rhubarb from another, although the wholesale price varies 75 per cent., and the effects in as great a proportion.

1942. **Drugs** are most of them soon spoiled by keeping, and in all cases they should be preserved in well-stoppered bottles, with the exception of some few, such as Epsom salts, nitre, soda, &c., which will keep without injury for an indefinite time. All vegetable medicines lose their virtues in the course of a few months, if not carefully closed from the air; and even in bottles they seldom keep good for a year. It is, therefore, desirable to purchase them in small quantities at a time, and to renew them at intervals of twelvemonths. Tinctures will keep for a much longer time; but even they, in the course of years, lose a portion of their properties; though, at the same time, as the spirit evaporates, they become more concentrated, and, consequently, stronger in a given quantity, until the virtues become lost by keeping. Thus, laudanum, when imperfectly corked, is often increased in strength fully one half, or even more, the spirit escaping at the cork, and the opium itself remaining behind. I have often seen a small bottle of it, which was originally full, left at the end of a year or two with only one-sixth, or one-eighth, of its contents occupied by a thick and black fluid, which is the concentrated laudanum five or six times the original strength. This ought to be known and guarded against, or otherwise the most fatal results might occur, from giving a dose five times as great as was intended. In the case of children, and, indeed, in adults also, a mistake from this cause may easily make the difference between life and death.

1943. **The Utensils** necessary for the domestic compounding of drugs, are—1st, *small scales and weights*; 2nd, *glass-measures*; 3rd, *a Wedgwood mortar*; 4th, *a spatula or two, and a slab of glazed earthenware*. These are generally arranged in a *medicine chest*, which is made with compartments to contain them as well as the drugs most commonly used, or likely to be required at short notice.

(*a*) **The Scales and Weights** which are used for this purpose are of brass, and only capable of weighing drachms, scruples, or grains. Under the head of weights and measures will be found the table of apothecaries weight, at page 622, which explains the various proportions used in compounding medicines; but when sold by the wholesale druggist, they are weighed by avoirdupoise weight. The marks employed are also there given, so that by their aid any prescription may be made out by those who understand the rudiments of Latin, remembering always that the numerals are Roman, the final (I) being written with a tail, thus, (xij). In addition to these, (ss) stands for *half*; and (ā or ana) for *of each*, (M) being the abbreviation for *misce*, mix, and (c̄ or cum), in English *with*, being frequently used.

(*b*) **Glass Measures** are of two sizes, called the drop measure and the ounce measure. The former is tall and thin, and is divided into 60 minims, the whole being marked at the top with the sign used for the drachm (ʒ). The ounce measure generally contains about three or four ounces, and is divided into drachms (ʒ), ounces (℥), and table-spoonfuls, each of which last are equal to half an ounce. For these glasses, which are intended for domestic use, it is always better to have them marked with the signs used by apothecaries on one side of the scale, and on the other with *tea-spoonful* equal to one drachm, *dessert-spoonful* equal to two drachms and a half, and *table-spoonful* equal to half an ounce. In this way, the variation in the capacity of differently-shaped spoons does not affect the dose of medicines, as they may always be measured out by the glass measure, and will then give an accurate result.

(*c*) **The Wedgwood Mortar** is employed for dissolving any saline matter or extract in water or other fluid when time is of consequence, or it may be used for mixing powders when dry; or for incorporating together extracts or powders so as to form a mass for pills. For regular dispensing, a brass mortar is used for the last purpose; but the Wedgwood make is quite sufficient for domestic use. When strong mineral acids or nitrate of silver are employed, a glass mortar is the proper article.

(*d*) **A Slab of Earthenware and a Spatula** are necessary for mixing together, and afterwards dividing, powders, pills, and ointments. A small spatula is useful for powders and pills, while a larger one is required for ointment. When a compound powder has been well mixed in the mortar, or, if small, on the slab, with the spatula, it is more easily divided into equal portions by means of the spatula, various simple methods being adopted; as, for instance, either by heaping up similar little heaps of powder in the papers, adding to one, and subtracting from another, until all are alike; or else by spreading out the powder and patting it flat, after which the spatula is drawn across it in straight lines, according to the number required. In making pills, a mass of a proper consistence, in point of tenacity, is first made, either in the mortar or on the slab; and, by means of syrup, confection, or water, according to the nature of the ingredients. This mass is then rolled out into a long, thin roll, with the spatula; after which it is first halved, and then again subdivided into halves, quarters, &c., until the desired number of portions corresponding with the intended pills is obtained. These being more or less square in form, are each rolled between the fingers until they become round, using magnesia or liquorice powder in all these operations, to prevent them sticking to the spatula, slab, or fingers. A pill-machine is employed by those who make large numbers of pills, but it is not necessary for domestic use. Ointments are merely rubbed on the slab with the spatula until the various ingredients are thoroughly mixed.

(*e*) THE MEDICINE CHEST is generally a small box of mahogany or rosewood, which is divided into partitions and drawers, for the purpose of containing the above articles, as well as the drugs in ordinary use. A complete chest would contain all, or nearly all, the drugs described in the present section, but a small one must be cut down to the most common kinds.

LIST OF DRUGS SUITED TO DOMESTIC USE.

1944. ACACIA GUM.—Exudes from the bark of various species of *acaciæ*; imported from Egypt and different parts of Africa.

(*a*) *Physical properties.*—Irregular fragments, of a pale yellow colour, semi-transparent, insipid, inodorous, soluble in water, but not in alcohol.

(*b*) *Therapeutical effects.*—Emollient and soothing.

(*c*) *Used* in catarrhs and other irritations of mucous membranes, also to suspend insoluble substances in liquids.

(*d*) *Dose.*—Half a drachm upwards.

1945. ACID, ACETIC.—Vinegar distilled from wood, and purified.

(*a*) *Physical properties.*—Limpid, colourless, volatile; odour, pungent and fragrant; taste, acid; specific gravity, 1.048.

(*b*) *Therapeutical effects.*—Stimulant, escharotic, but when diluted with water, cooling.

(*c*) *Used* in lotions for cooling purposes, diluted with water, also in ringworm and removing warts.

(*d*) *Dose.*—It is not given internally, except in combination with other remedies.

1946. ACID, ACETIC (*diluted*).—Diluted acetic acid, prepared from the acid, par. 1945.

(*a*) *Physical properties.*—A clear acid fluid; specific gravity, 1.006.

(*b*) *Therapeutical effects.*—Astringent, diaphoretic, cooling, and antiseptic. It is useful in making the acetate of lead more soluble. Externally, it is stimulant in its full strength, or when mixed with water, cooling.

(*c*) *Used* in fevers internally; or as a gargle with capsicum; or as an inhalation in sore throat. A useful lotion when mixed with spirit and water, in bruises, sprains, and burns.

(*d*) *Dose.*—Half a drachm to one drachm.

1947. ACID, BENZOIC.

(*a*) *Physical properties.*—White and shining crystals, with flakes of a fragrant aromatic odour, and acid taste. Sparingly soluble in water, but is easily dissolved in alcohol. When heated, is completely evaporated, with an agreeable and peculiar odour; but if the temperature is raised too high, it takes fire and burns with a yellow flame.

(*b*) *Therapeutical effect.*—Stimulant and expectorant.

(*c*) *Used* in chronic bronchitis.

(*d*) *Dose.*—5 grains to half a drachm twice a day.

1948. ACID, CITRIC, prepared from the juice of lemons.

(*a*) *Physical properties.*—Sharp acid taste, white semi-transparent crystals of a rhomboidal shape. Specific gravity, 1.617; decomposed by heat; soluble in twice their weight of cold, and half their weight of boiling water.

(*b*) *Therapeutical effects.*—Refrigerant and antiseptic.

(*c*) *Used* in febrile and inflammatory complaints; dissolved in water as a substitute for lemon juice, and added to soda to form the common effervescing draught.

(*d*) *Dose.*—10 grains to one scruple; 15 grains of the acid neutralize 20 grains of bicarbonate of soda, to form the effervescing draught.

1949. ACID, GALLIC, prepared from galls.

(*a*) *Physical properties.*—A powder of a nearly colourless semi-crystalline appearance, dissipated by heat, dissolves in water and spirit.

(*b*) *Used* in discharges of blood and in diarrhœa, and in other mucous discharges. Also in hemorrhoids.

(*c*) *Dose.*—2 to 5 grains. As an injection half a drachm dissolved in one ounce of water; as an ointment, 20 grains are mixed with an ounce of lard, with the addition of 30 or 40 grains of powdered opium.

1950. ACID, HYDROCHLORIC, formerly called muriatic acid, obtained from common salt.

(*a*) *Physical properties.*—Emits a white, acrid, and suffocating vapour, on exposure to the air. Taste intensely acrid and caustic, colourless when pure, but usually is of a straw colour from the presence of peroxide of iron, or nitrous acid. Specific gravity, 116.

Not used in its full strength.

1951. ACID, HYDROCHLORIC (*diluted*).—The above acid, mixed with three times its bulk of water.

(*a*) *Physical properties.*—The same as the full acid, but weaker, which see.

(*b*) *Therapeutical effects.*—Tonic, antiseptic, and partially diuretic, by promoting all the secretions.

(*c*) *Used*, when combined with diluted nitric acid, in affections of the liver; also with bitters, to prevent the generation of worms; in gargles for sore throat.

(*d*) *Dose.*—20 minims to 40.

1952. ACID, HYDROCYANIC (*diluted.*)

(*a*) *Physical properties.*—A transparent, colourless, and limpid fluid, with a strong odour of bitter almonds.

(*b*) *Therapeutical effects.*—Sedative, lowering the action of the heart, and allaying irritability of the mucous membrane.

(*c*) *Used* in coughs of all kinds, including hooping-cough; in irritability of the stomach, and neuralgia. Externally, it is useful in allaying itching of the skin. *Too powerful for domestic use.*

(*d*) *Dose.*—2 minims to 3, in almond mixture or bitter infusion. If the full action is required, it should be given with distilled water. POISONOUS in large doses.

1953. ACID, NITRIC, or *aqua-fortis.*

(*a*) *Physical properties.*—Very acid and corrosive; fumes strongly with a suffocating odour; evaporates entirely by heat; when pure colourless, but often yellowish from the presence of nitrous acid; absorbs water from the air, tinges the skin yellow. Specific gravity, 1.42.

(*b*) *Therapeutical effects.*—Strongly caustic.

(*c*) *Used* only externally, for the removal of excrescences—such as warts, also for certain ulcers not commonly met with, and for carious teeth, *all requiring the greatest care.*

1954. ACID, NITRIC (*diluted*).—The above mixed with nine times its bulk of distilled water.

(*a*) *Physical properties.*—The same as the above, varying only in degree. Specific gravity, 1.082.

(*b*) *Therapeutical effects.*—Tonic, antiseptic, and when given with diluted hydrochloric acid, useful in torpid condition of the liver.

(*c*) *Used* as a drink, largely diluted, in typhus fever (1 drachm to a pint of water), in chronic affections of the liver, and dyspepsia.

(*d*) *Dose.*—5 minims to 20.

1955. ACID, SULPHURIC, or *oil of vitriol.*

(*a*) *Physical properties.*—A dense, transparent, colourless, very acid, and oil-like fluid, inodorous, and excessively corrosive; attracts water from the air. Specific gravity, 1.848.

(*b*) *Therapeutical effects.*—Stimulant and escharotic.

(*c*) *Used* for the bites of venomous animals.

1956. ACID, SULPHURIC (*diluted*).—The above mixed with about eleven times its bulk of water.

(*a*) *Physical properties.*—Strong acid taste, inodorous, colourless, and transparent. Specific gravity, 1.103.

(*b*) *Therapeutical effects.*—Tonic, astringent, and antiseptic.

(*c*) *Used* in dyspepsia, also to check sweatings, salivation, and diarrhœa; likewise as a gargle.

(*d*) *Dose.*—10 minims to 30, diluted largely (2 drachms to 8 ounces) as a gargle, with honey, sage, &c.

1957. ACID, TARTARIC.

(*a*) *Physical properties.*—Colourless imperfect crystals, inodorous, very acid, soluble largely in water.

(*b*) *Therapeutical effects.*—Refrigerant, antiseptic, diuretic, and slightly aperient.

(*c*) *Used* in fevers, &c., with some soda or potass, as an effervescing draught, instead of citric acid; the proportions being the same (see CITRIC ACID).

(*d*) *Dose.*—15 grains to 25.

1958. ÆTHER, SULPHURIC.

(*a*) *Physical properties.*—A limpid, volatile, inflammable fluid, without colour, produces great cold by evaporation; taste, peculiar, but hot and pungent; sparingly soluble in water, readily so in alcohol. Specific gravity, 750. Dissolves camphor, resin, caoutchouc, and fat.

(*b*) *Therapeutical effects.*—A diffusible stimulant, afterwards narcotic and antispasmodic; externally cooling; when inhaled producing anæsthesia.

(*c*) *Used* in hysteria, faintings, asthma, and other spasmodic complaints.

(*d*) *Dose.*—20 minims to 60, in water.

1959. ALOES, BARBADOES.—The inspissated juice of the cut leaf of the *Aloe spicata*, imported from the Cape of Good Hope and West Indies.

(*a*) *Physical properties.*—Of a dark brown colour, and shining resinous surface, with a strong disagreeable odour, and very bitter taste; very difficult to powder, and soluble in diluted alcohol.

(*b*) *Therapeutical effects.*—A stimulating purgative, producing its chief effects on the lower bowels. Apt to produce and aggravate hemorrhoids.

(*c*) *Used* in dyspepsia and in head-affections; also as a common purgative.

(*d*) *Dose.*—One-fourth of a grain to 5 grains, well powdered, or dissolved in hot water.

1960. ALOES, HEPATIC. — An uncertain species.

(*a*) *Physical properties.*—A liver-brown coloured extract, opaque, with a dull and waxy fracture; taste very bitter, smell peculiar, but not fragrant; powder of a golden colour.

(*b*) *Therapeutical effects.* — A stimulant aperient, somewhat stomachic and, like the last, apt to engender hemorrhoids.

(*c*) *Used* like the last.

(*d*) *Dose.*—1 grain to 5 grains, prepared as above.

1961. ALOES, SOCOTRINE.—Another doubtful species of aloe.

(*a*) *Physical properties.*—A brittle extract, with a bitter taste; of a reddish-brown colour, and aromatic odour. The fracture is usually smooth and shining, but sometimes a little rough. Easily reduced to a powder of a golden-yellow colour. Soluble in water and spirit.

(*b*) (*c*) (*d*) The same as the preceding article.

1962. ALUM.

(*a*) *Physical properties.*—A semi-transparent, rough, irregular mass of saline matter. Taste, acid-astringent. Soluble in 18 parts of water at 60 degrees, and in a little more than an equal weight of water at 212 degrees.

(*b*) *Therapeutical effects.*—Astringent and styptic.

(*c*) *Used* internally in hemorrhages and mucous discharges; externally, as a wash in opthalmia, or as a gargle in relaxed uvula.

(*d*) *Dose.*—10 grains to 20.

1963. AMMONIACUM, GUM. — A natural exudation from the Coshak plant.

(*a*) *Physical properties.*—In irregular dry masses and tears, of a yellow colour externally, internally white; odour, peculiar; taste, nauseous, sweet, and bitter; forms emulsion with water of a whity-brown colour, soluble in vinegar and alcohol.

(*b*) *Therapeutical effects.* — Stimulating expectorant.

(*c*) *Used* in asthma, and chronic bronchitis, especially in old people.

(*d*) *Dose.*—10 grains to 30, in pills or emulsion.

1964. AMMONIA, only used in solution, except in combination with acids.

1965. AMMONIA, LIQUOR OF.—Ammonia condensed in water.

(*a*) *Physical properties.*—A stimulating solution, with a strong smell of ammonia. Acts on the skin with the power of a blister, or when reduced in strength as a rubefacient only.

(*b*) *Therapeutical effects.* — Stimulating, diaphoretic, anti-acid, when given internally. Externally, irritant and escharotic.

(*c*) *Used*, when largely diluted, in faintings, asphyxia, hysteria, spasms, acidities of the stomach; and, externally, as an irritant of the skin.

(*d*) *Dose.*—5 minims to 15.

1966. AMMONIA, MURIATE OF.—Now called the hydrochlorate.

(*a*) *Physical properties.*—A solid, semi-crystalline mass, with a cool, acrid, and penetrating taste. Sublimates at 300 degrees. Soluble in three parts of cold water and in its own weight of boiling water; also in five parts of alcohol.

(*b*) *Therapeutical effects.*—Slightly aperient and emetic, diaphoretic and diuretic. Externally, rubefacient and cooling.

(*c*) *Used* chiefly externally, dissolved in water for indolent tumours and for chilblains; also, to procure a low temperature, as a freezing powder. (See page 403.)

(*d*) *Dose.*—10 grains to 30.

1967. AMMONIA, SESQUI CARBONATE OF.—Ammonia united with carbonic acid.

(*a*) *Physical properties.* — A mass of irregular crystals, somewhat resembling white sugar, but more transparent and striated. Smell, pungent; taste, sharp and alkaline; soluble in four times its weight of cold water; becomes opaque and friable on exposure to the air.

(*b*) *Therapeutical effects.* — Stimulating, antispasmodic, diaphoretic, and anti-acid.

(*c*) *Used* in dyspepsia, hysteria, and all diseases requiring a rapidly acting diffusable stimulant. Externally, to the nostrils in syncope.

(*d*) *Dose.*—2 grains to 5, in pills or dissolved in any fluid.

1968. ALMONDS, SWEET.

(*a*) *Physical properties.*—Soft, oily, and sweet taste; kernels brown outside, white within.

(*b*) *Therapeutical effects.*—Demulcent.

(*c*) *Used* in emulsion for slight chronic coughs.

1969. ALMONDS, OIL OF.—Obtained from the almond.

(*a*) *Physical properties.*—An inodorous and tasteless oil, of a straw colour. Easily mixed with water to form an emulsion, with yolk of egg or mucilage; soon spoiled by exposure to the air.

(*b*) *Therapeutical effects.*—Demulcent.

(*c*) *Used* in cases of irritant poisoning; also in bronchitis, mixed with other remedies.

1970. ANISEED, OIL OF.

(*a*) *Physical properties.*—An oil of a bright straw colour, resembling the seeds in taste and smell.

(*b*) *Therapeutical effects.*—Carminative and stomachic; also slighty antispasmodic.

(*c*) *Used* in flatulence and colicy pains; also for infants and children when griped.

(*d*) *Dose.*—3 to 5 minims, rubbed down with sugar or mucilage.

1971. ANTIMONY, POTASSIO-TARTRATE OF.—Tartar emetic.

(*a*) *Physical properties.*—A colourless, transparent, inodorous, crystallized salt, with a slightly metallic taste. Soluble in fifteen times its weight of cold water, and twice its weight of boiling water; insoluble in pure alcohol, but soluble in proof spirit or wine. The aqueous solution becomes decomposed by keeping.

(*b*) *Therapeutical effects.*—Emetic in large doses; diaphoretic in small ones; expectorant, slightly aperient and alterative; externally applied, produces a crop of pustules.

(*c*) *Used* to evacuate the stomach; also in pneumonia in large doses; as a diaphoretic in cutaneous diseases. Externally applied in the form of an ointment, to produce counter-irritation.

(*d*) *Dose.*—As an emetic, 1 grain to 4 grains in solution; in pneumonia, ½ a grain to 3 grains, often repeated; as an expectorant, or diaphoretic, ⅙ of a grain to ¼ a grain.

1972. ASAFŒTIDA, GUM.

(*a*) *Physical properties.*—A mass of irregular pieces, varying in colour from red or reddish-brown to white; odour resembling garlic, but more fetid; taste, bitter and slightly acrid; difficult to powder, unless rubbed with carbonate of ammonia. Forms a milky mixture with water.

(*b*) *Therapeutical effects.*—Antispasmodic, expectorant, anthelminthic.

(*c*) *Used* in hysteria, flatulence, colic, &c.

(*d*) *Dose*—5 to 10 grains.

1973. BISMUTH, TRISNITRATE OF.—The metal bismuth united with nitric acid.

(*a*) *Physical properties.*—A white, tasteless, inodorous powder, very slightly soluble in water.

(*b*) *Therapeutical effects.*—Antispasmodic, stomachic, and tonic.

(*c*) *Used* in dyspepsia, attended with pain of the stomach, and water-brash.

(*d*) *Dose.*—5 to 10 grains.

1974. BORAX.—Biborate of soda.

(*a*) *Physical properties.*—Sweetish, shining, efflorescent crystals, soluble in twelve parts of cold, and two parts of boiling water.

(*b*) *Therapeutical effects.*—Absorbent, cooling, and alterative.

(*c*) *Used* in intestinal irritation of infants. Externally applied to thrush, and to cutaneous diseases.

(*d*) *Dose.*—5 grains to 30. Externally applied, dissolved in eight times its weight of honey or mucilage.

1975. BUCHU.—Leaves of the Buchu.

(*a*) *Physical properties.*—Leaves of a strong peculiar smell, and slightly bitter but earthy taste. Of an olive colour on the upper surface, pale and rugose below, where they are studded with minute glands.

(*b*) *Therapeutical effects.*—Tonic, diuretic, and sudorific; exerting also a peculiarly soothing effect upon the bladder and kidneys.

(*c*) *Used* in gout and rheumatism, but chiefly in chronic inflammation of the bladder.

1976. CALAMINE (*prepared*).—A native carbonate of zinc.

(*a*) *Physical properties.*—A dull, pink powder, heavy, and insoluble in water.

(*b*) *Therapeutical effects.*—Astringent and absorbent.

(*c*) *Used* extensively to heal sores.

1977. CHLORIDE OF LIME.—A combination of chlorine and lime—proper, *chlorinated lime.*

(*a*) *Physical properties.*—A white, semi-transparent powder; pungent bitter taste; gives out the peculiar smell of chlorine; is deliquent, and soluble in water and alcohol.

(*b*) *Therapeutic effects.*—Slightly tonic, strongly antiseptic, and destructive to noxious effluvia.

(*c*) *Used* either in powder or solution, on scrofulous swellings, and other glandular tumours, combined with bitters or alteratives; also a disinfectant.

(*d*) *Dose.*—5 to 10 grains twice a day.

1978. CHLORIDE OF ZINC.—A combination of zinc with chlorine.

(*a*) *Physical properties.*—In solid piece, snow-white, inodorous, having a strongly styptic and metallic taste.

(*b*) *Therapeutical effects.*—Powerfully caustic, destroying the vitality of the part with which it is in contact, and causing very severe pain. In solution, it is used as a disinfectant, appearing to act more energetically than chlorinated soda or lime, with a less disagreeable odour of chlorine.

(*c*) *Used* as a caustic in cancer and fungoid disease. In solution, it is applied to cutaneous diseases, and to mucous membranes, but requires great caution in its use. As a disinfectant, it must be largely diluted.

1979. CHLORINATED SODA, SOLUTION OF.

(*a*) *Physical Properties.*—A solution of a yellowish colour, with a strong odour of chlorine, and a sharp astringent taste.

(*b*) *Therapeutical effects.*—These are the same as in chloride of lime.

(*c*) *Used* in the same way as chloride of lime. It is better suited for internal exhibition, or for making gargles to be applied to foul ulcers of the mouth or throat.

(*d*) *Dose* for internal use 20 minims to 30, in a table-spoonful of water. Externally, half an ounce to half a pint of water.

1980. CAMPHOR.—A peculiar substance, obtained by distillation from the wood of the *Laurus camphora.*

(*a*) *Physical properties.*—In large white semi-transparent cakes, with a strong peculiarly fragrant and aromatic odour; taste, bitter and acrid; feels unctuous to the touch; when broken presents a foliated or crystallized structure; is volatile, so as to disappear entirely in course of time; insoluble in water; soluble in alcohol, ether, acetic acid, and the fixed oils.

(*b*) *Therapeutical effects.*—Stimulant, diaphoretic, sedative; externally, soothing.

(*c*) *Used* in hysteria, asthma, chorea, and generally in spasmodic diseases. Externally, in muscular pains, bruises, &c.

(*d*) *Dose.*—3 grains to 5, in pills. When dissolved in water as camphor mixture, the quantity is scarcely appreciable.

1981. CANTHARIDES.—Blistering flies.

(*a*) *Physical properties.*—An oblong green and gold body, with black antennæ; odour, fetid and pungent; taste, acrid.

(*b*) *Therapeutical effects.*—Stimulant, diuretic, and blistering.

(*c*) *Used* internally by medical men, but not adapted for domestic exhibition, being highly dangerous when employed in improper cases. Externally used as a blister; or to cause counter-irritation in a milder form; or to produce growth of the hair.

1982. CANTHARIDES, PLASTER OF.—Blistering plaster. Sometimes prepared in the form of a tissue paper, imbued with the active principle.

(*a*) *Physical properties.*—The plaster is a firm preparation requiring the warmth of the hand to enable it to be spread upon leather or calico. It soon spoils by keeping; and if more than a month old should, after spreading, be dusted over with powdered cantharides.

(*b*) *The Therapeutical effect* of this plaster is to raise the cuticle from the cutis, producing at the same time a large secretion under the form of serous fluid. The time occupied varies from 3 hours to 12, or even more. In babies the blister should always be carefully watched from the expiration of the former of these periods, after which it often rises rapidly, and if allowed to remain on longer would be liable to produce severe ulceration of the skin.

1983. CANTHARIDES, dissolved in acetic acid.

(*a*) *Physical properties.*—A dark brown solution, very pungent, and rapidly vesicating.

(*b*) *Therapeutical effects* nearly the same as the plaster, but more rapid; and perhaps not quite so successful in producing a copious discharge of serum.

(*c*) *Used* for the same diseases, and with the same view; but brushed on to the skin with a glass brush sold for the purpose.

1984. CAPSICUM.

(*a*) *Physical properties.*—Berries of a red colour, and an extremely pungent odour and taste, which is yielded to alcohol, ether, vinegar and water.

(*b*) *Therapeutical effects.* — Stimulant, stomachic, and rubefacient.

(*c*) *Used* in dyspepsia, flatulence; externally as an ingredient in gargles for relaxed sore throat.

(*d*) *Dose.*—3 grains to 5 grains, in pills; 2 drachms to 8 ounces form the strength for using as a gargle diluted largely with water.

1985. CHARCOAL, ANIMAL.—Procured by burning bullock's blood.

(*a*) *Physical properties.*—A black, insipid, light powder, which removes colouring matters.

(*b*) *Therapeutical effects.*—Decolorant and antiseptic.

1986. CHARCOAL, VEGETABLE.—Prepared by burning wood.

(*a*) *Physical properties.* — Solid, black, porous, and brittle; inodorous and tasteless; insoluble in water; destroys some vegetable colouring matters.

(*b*) *Therapeutical effects.*—Antiseptic and decolorant.

(*c*) *Used* as an ingredient in tooth-powder; also to mix with other substances in forming a poultice for foul ulcers. Sometimes given internally.

(*d*) *Dose.*—10 grains to 20.

1987. CARDAMOM SEEDS.

(*a*) *Physical properties.*—Seeds with a grateful aromatic odour, and a warm pungent taste; the active principle soluble in water and alcohol.

(*b*) *Therapeutical effects.*—Carminative, cordial, stomachic, and stimulant.

(*c*) *Used* in dyspepsia, flatulent colic of children, and to remove the griping properties of infants' aperients.

(*d*) *Dose.*—5 to 10 grains in powder.

1988. CARDAMOMS, TINCTURE OF.—The above seeds macerated in spirits of wine.

1989. CARAWAY SEEDS.

(*a*) *Physical properties.*—Seeds of a warm, aromatic, and pungent taste, and a peculiar aromatic odour. Their qualities are taken up partly by water, and completely by alcohol.

(*b*) *Therapeutical effects.*—Carminative and stomachic.

(*c*) *Used* in flatulent cholic, and to prevent the griping of purgatives.

(*d*) *Dose.*—5 to 15 grains.

1990. CARAWAY, OIL OF, is prepared from the above, and used for the same purposes.

(*d*) *The dose* is 1 or 2 minims.

1991. CASCARILLA BARK.

(*a*) *Physical properties.*—A bark in curled pieces or short quills, which break with a resinous fracture; externally of a greyish colour, internally brownish red; odour, aromatic and agreeable; when burnt emits a smell resembling musk; taste, warm, bitter, and aromatic; yields its virtues to water in part, and completely to proof spirit.

(*b*) *Therapeutical effects.*—Stimulant, stomachic, and tonic.

(*c*) *Used* in dyspepsia, flatulent colic, chronic dysentery, and gangrene.

(*d*) *Dose.*—20 to 30 grains of this powder three or four times a day.

1992. CATECHU.—An extract of the wood of the *Acacia catechu* from India.

(*a*) *Physical properties.* — Inodorous, sweetish, mucilaginous, astringent, and bitter; colour, dark brown; soluble in water and alcohol.

(*b*) *Therapeutical effects.*—Mild, unirritating, powerfully astringent, styptic.

(*c*) *Used* in diarrhœa and in internal hemorrhages; also, locally, as a gargle in relaxed uvula or sore throat.

(*d*) *Dose.*—15 to 20 grains in powder

1993. CASTOR OIL, obtained from *Ricinus communis.*

(*a*) *Physical properties.*—A pale yellow-coloured, transparent and viscid oil, with a faint odour and nauseous taste.

(*b*) *Therapeutical effects.*—Mildly aperient.

(*c*) *Used* in colic and in those cases of constipation which will not bear drastic purgatives; also for mixing with gruel for the ordinary enema.

(*d*) *Dose.*—A tea-spoonful to one or two table-spoonfuls; an ounce is the proper quantity for mixing with gruel to make an enema.

1994. CERATE.—A species of ointment made rather hard with wax.

(*a*) SIMPLE CERATE.—Add 20 ounces of melted wax to a pint of olive oil, and mix while warm, stirring till cold.

(*b*) CERATE OF CALAMINE.—Mix seven ounces and a half of melted wax with a pint of olive oil; then remove them from the fire, and when they begin to thicken add seven ounces and a half of calamine, and stir constantly until they cool.

(*c*) CERATE OF CANTHARIDES.—Mix an ounce of finely-powdered cantharides with six ounces of spermaceti cerate.

(*d*) CERATE OF SPERMACETI.—Melt together eight ounces of white wax and ten of spermaceti; then add a pint of olive oil, and stir together till they cool.

(*e*) CERATE OF ACETATE OF LEAD.—Melt four ounces of white wax in eight fluid ounces of olive oil; then gradually add four drachms of powdered acetate of lead, previously rubbed with two fluid ounces of olive oil, and stir with a spatula till they unite.

(*f*) CERATE OF RESIN.—Mix together fifteen ounces each of resin and wax, and melt them over a slow fire; then add a pint of olive oil, and press the cerate, while hot, through a linen cloth.

(*g*) COMPOUND SOAP CERATE.—Boil fifteen ounces of powdered oxide of lead with a gallon of vinegar over a slow fire, constantly stirring them until they unite; then add ten ounces of soap, and boil again in a similar manner till all the moisture is evaporated; lastly, mix with them 12½ ounces of wax, previously melted in a pint of olive oil.

1995. CHLOROFORM.

(*a*) *Physical properties.* — A colourless fluid, with a pleasant smell, somewhat resembling peach blossoms. Insoluble in water. Evaporates quickly.

(*b*) *Therapeutical effects.*—Stimulant followed by a sedative effect, rapidly produces anæsthesia.

(*c*) *Used* to relieve sickness, or in some painful conditions of the stomach, but not adapted for domestic exhibition. Externally, it relieves pain, when confined by spongio-piline, when it often blisters. Applied to a carious tooth on cotton, it gives intense pain at the moment, but afterwards affords great relief. It requires caution in its employment to prevent inhaling its vapours to a dangerous extent.

(*d*) *Dose.*—1 or 2 minims suspended in mucilage. Externally, it is applied in its usual condition.

1996. CHAMOMILE FLOWERS.

(*a*) *Physical properties.*—The flowers are small, with a strong fragrant odour, and bitter aromatic taste, joined with some slight degree of warmth. Water and alcohol both absorb the virtues of this plant.

(*b*) *Therapeutical effects.*—Tonic, stomachic and carminative. The warm infusion, when weak, is emetic. Externally soothing.

(*c*) *Used* in dyspepsia, hysteria, flatulence, and also to work off emetics.

(*d*) *Dose* of the powder.—30 to 40 grains twice a day.

1997. CINCHONA BARK (*yellow*).

(*a*) *Physical properties.*—Larger, thicker, and less rolled than the pale bark. Externally of a brownish yellow, and internally of a cinnamon brown. The fracture is fibrous; taste bitter, and less aromatic than the pale, with scarcely any degree of astringency.

(*b*) *Therapeutical effects.* —Astringent, tonic, antiseptic, and febrifuge.

(*c*) *Used* in typhoid fevers, and in all low states of the system, being in such cases superior to quinine.

(*d*) *Dose.*—10 grains to 50, in wine or wine and water.

1998. CINCHONA BARK (*pale*).

(*a*) *Physical properties.*—In pieces five or six inches long, flat, or convoluted; externally, of a greyish brown colour, frequently covered with lichens; internally of a bright cinnamon hue; fracture, smooth and even; powder of a yellow-orange colour; taste, bitter and astringent; odour, peculiar but aromatic.

(*b*) (*c*) (*d*) The same as the pale, but not so efficacious.

1999. CINCHONA BARK (*red*).

(*a*) *Physical properties.*—Commonly in thick flat convoluted pieces, covered with a rough, entire, reddish brown epidermis, on which lichens are often attached; fracture short and smooth; inner structure fibrous, and of a cinnamon colour; taste more bitter and astringent than either the yellow or pale barks.

(*b*) (*c*) (*d*) The same as the yellow and pale barks; but supposed by some to be more stomachic.

2000. CALOMEL.—(See MERCURY.)

2001. CINNAMON.—Bark, oil, and water, used as a warm and cordial spice to prevent the griping of purgatives, &c.

2002. COCHINEAL.—An insect dried and imported from Mexico.

(*a*) *Physical properties.*—In irregular and roundish masses, one or two lines in length; blackish red externally, purple red internally; inodorous; taste, acrid, bitter, and astringent; imparts a beautiful red colour to water and alcohol.

(*b*) *Therapeutical effects* are said to be diuretic, sudorific, and antispasmodic, but of more than doubtful efficacy.

(*c*) *Used* with carbonate of potass as a popular remedy for the hooping-cough; principally employed as a colouring agent.

(*d*) *Dose.*—¼ to ½ a grain, in powder.

2003. COLCHICUM.—The root and seeds of *Colchicum autumnale.*

(*a*) *Physical properties.*—The *root* is the underground stem or *cormus*, about the size of a walnut, rounded on one side, flattened on the other; internally white, solid, fleshy, and succulent, with an acrid bitter taste. The *seeds* are small, spherical, and dark-brown in colour, without smell, and with a bitter acrid taste; internally white, and consisting of a minute embryo lodged in a horny elastic envelope, that is not readily powdered.

(*b*) *Therapeutical effects.*—Diuretic, sudorific, sedative, purgative, and emetic.

(*c*) *Used* in gout, rheumatism, dropsy, and in inflammatory diseases generally, in which it supersedes the necessity for bleeding; but requiring great care in its exhibition, as it depresses the system sadly, and is therefore unfit for domestic use.

(*d*) *Dose.*—3 grains to 5.

2004. COD LIVER OIL.—Prepared from the liver of the cod-fish.

(*a*) *Physical properties.*—An oil of three different colours: pale yellow, pale brown, and dark brown. The pale brown appears to possess the highest virtues.

(*b*) *Therapeutical effects.* —Nutritive, and acting also on the general system from containing very small doses of iodine and bromine.

(*c*) *Used* largely in consumption, in which it seems to act by keeping up the supplies rendered necessary by the waste caused by the discharge from the lungs; also in other exhausting diseases.

(*d*) *Dose.*—1 drachm carried up to 4 in any convenient vehicle, as infusion of cloves.

2005. COLOCYNTH.—The peeled fruit of the bitter cucumber.

(*a*) *Physical properties.*—A white, soft, porous, medullary substance, investing the seeds with an intensely bitter, acrid, and nauseous taste.

(*b*) *Therapeutical effects.*—Powerfully aperient.

(*c*) *Used*, with warm cordial spices, as an ordinary aperient, (see Extracts).

2006. CONFECTIONS are preparations intended to facilitate the use of remedies, by combining them in a form suitable for the stomach; the chief are as follows:—

(*a*) Confection of Almonds, intended to be kept for making almond emulsion, but scarcely required for domestic use, as the blanched almonds may at all times be readily rubbed down in the mortar with a little sugar, and the emulsion has a much more fresh and agreeable taste than if prepared from stale confections; six or eight almonds will make half a pint of emulsion.

(*b*) Confection, Aromatic, is prepared by mixing a number of spices together with sugar; but as it is sold by the druggists in a much better and cheaper form than it can be prepared at home, it is useless to give the formula here. It is intended as a cordial addition to chalk mixture, &c., and is *used* in diarrhœa, hysteria, and dyspepsia; the *dose* being 10 to 20 grains.

(*c*) Confection of Opium is also sold by the druggists. It contains 1 grain of solid opium in 36, and is therefore a remedy not to be trifled with; but at the same time it is, perhaps, the most innocent form in which opium can be given for domestic use, especially in diarrhœa, or colicy pains. The *dose* is from 10 to 20 grains, beyond which no one should go, without further medical advice.

(*d*) Confection of Pepper, a strongly spiced article, prepared and sold by the druggists, and possessing carminative and stomachic powers. It is used in the dyspepsia of the aged, and in chronic internal hemorrhoids. The *dose* being half a drachm to 1 drachm.

(*e*) Confection of Roses, employed as a useful form for making up pills; its properties being said to be slightly astringent and tonic, but not so as to be appreciated easily.

(*f*) Confection of Senna, is a preparation of senna leaves, powdered and mixed with coriander seeds, liquorice, figs, tamarinds, prunes, and sugar. It is mildly laxative, and is *used* in habitual costiveness, and for hemorrhoids; the *dose* being 1 drachm to 2 or 3.

2007. Conium (Hemlock).—The leaves of *Conium maculatum*, an indigenous plant.

(*a*) *Physical properties.*—Has a heavy narcotic smell, with a bitter, nauseous, and herbaceous taste; colour, dull green; powers soon destroyed by light. Should be gathered just as the plant comes into flower, and dried in the sun, or in a stove.

(*b*) *Therapeutical effects.*—Sedative, narcotic—in some cases alterative, and even tonic.

(*c*) *Used* in scirrhous and cancerous affections externally, and internally for neuralgia and pulmonary complaints; also in the scrofulous complaints of children, especially in opthalmia—in all cases requiring great caution; externally as a poultice, made by scalding the fresh leaves.

(*d*) *Dose.*—2 to 3 or 4 grains.

2008. Chalk, Prepared.—Friable carbonate of lime, rubbed into a fine powder and washed.

(*a*) *Physical properties.*—An inodorous, insipid, white, friable powder, heavy, and insoluble in water.

(*b*) *Therapeutical effects.*—Anti-acid, astringent, and absorbent.

(*c*) *Used* in acidities of the stomach and bowels, and to correct the irritation which is established in diarrhœa. Externally, as a mild application to sores and burns.

(*d*) *Dose.*—10 to 15 grains.

2009. Copaiba Balsam.

(*a*) *Physical properties.*—A liquid of a transparent yellowish colour, and peculiar smell and taste, which is pungent, acrid, and nauseous; when fresh, of the consistence of linseed oil, gradually becoming thicker by exposure to the air, till at last it is as solid as resin; soluble in ether and alcohol.

(*b*) *Therapeutical effects.*—Stimulant, diuretic, purgative in large doses; allays irritation of the mucous membranes, and especially those of the urinary passages.

(*c*) *Used* in chronic bronchitis, spasmodic asthma, hooping-cough, and in chronic inflammations of the bladder, &c.

(*d*) *Dose.*—10 minims to 30 in emulsion, or in the gelatine capsules in which it is sold.

2010. Coriander Seeds are used largely as a warm kind of spice.

(*a*) *Physical properties.*—Globular, slightly striated, of a yellowish-brown colour, and agreeable odour. The taste is sweetish, but somewhat acrid and aromatic.

(*b*) *Therapeutical effects.*—Stimulating, stomachic, and carminative.

(*c*) *Used* principally to cover the taste of other medicines, and to prevent their irritating effects.

(*d*) *Dose.*—15 grains to 30.

2011. Creasote.—A peculiar liquid prepared from pyroxilic oil.

(*a*) *Physical properties.*—An oily, colourless, transparent fluid, with a disagreeable smell, resembling somewhat the odour of badly-smoked meat. It burns with a smoky flame. With water at 68 degrees it combines in two distinct and separate portions, one stronger than the other, so as to require agitation immediately before use.

(*b*) *Therapeutical effects.*—Tonic, stomachic, diaphoretic, antiseptic, and styptic.

(*c*) *Used* internally in phthisis; also in troublesome vomiting, from any cause not readily understood, as sea-sickness. Or, that occurring in pregnancy. Externally to carious teeth, malignant sores, and cutaneous eruptions.

(*d*) *Dose.*—1 to 4 minims in alcohol and water, two or three times a day, or made into a pill, with crumb of bread.

2012. Copper, Sulphate of.—Blue stone, a union of sulphuric acid with copper.

(*a*) *Physical properties.* — Bright blue crystals, efflorescent; taste, metallic and styptic; soluble in twice its weight of water at 60 degrees.

(*b*) *Therapeutical effects.*—Tonic, astringent, antispasmodic, emetic and caustic.

(*c*) *Used* internally in diarrhœa, epilepsy, hysteria; externally, dissolved in water as a collyrium in opthalmia, to old indolent ulcers; and in its solid state as a mild caustic.

(*d*) *Dose.*—This should never be administered internally without medical advice; externally, it may be useful.

2013. Decoction of Aloes (*compound*).

(*a*) Boil 7 drachms of liquorice, 1 drachm of carbonate of potass, 1½ drachm of socotrine aloes, 1½ drachm of bruised myrrh, and the same quantity of saffron, in 1½ pint of distilled water, down to a pint, and strain; then add 7 fluid ounces of compound tincture of cardamom.

(*b*) *Therapeutical effects.*—Stomachic, stimulant, aperient; acting chiefly on the lower bowels. (See Aloes.)

(*c*) *Used* in dyspepsia, habitual constipation, jaundice, &c.

(*d*) *Dose.*—½ ounce to 1 ounce.

2014. Decoction of Starch.

(*a*) Rub 4 drachms of starch with a pint of water gradually added, then boil for a short time, till it thickens.

(*b*) *Therapeutical effects.*—Soothing.

(*c*) *Used* chiefly as a glyster in diarrhœa or dysentery, with the addition of opium in some form.

2015. Decoction of Iceland Moss.

(*a*) Boil 5 drachms of Iceland moss in a pint and a half of water down to a pint, and strain.

(*b*) *Therapeutical effects.*—Tonic, emollient, slightly astringent.

(*c*) *Used* in consumption and dysentery.

(*d*) *Dose.*—1 to 2 ounces.

2016. Decoction of Cinchona.—Yellow, pale, or red.

(*a*) Boil 10 drachms of bruised yellow, pale, or red cinchona in a pint of water for ten minutes, in a closed vessel, then strain.

(*b*) *Therapeutical effects.*—Antiseptic, astringent, tonic, febrifuge.

(*c*) *Used* in fever, malignant sore throat, dyspepsia.

(*d*) *Dose.*—1½ to 3 ounces twice or thrice a day.

2017. Decoction of Quince Seeds.

(*a*) Boil two drachms of quince seeds in a pint of water, in a tightly covered vessel, for ten minutes, and strain.

(*b*) *Therapeutical effects.*—Demulcent.

(*c*) *Used* in thrush, and irritable conditions of the mucous membrane.

2018. Decoction of Dulcamara (Woody-nightshade).

(*a*) Boil ten drachms of dulcamara in a pint and a half of water down to a pint, and strain.

(*b*) *Therapeutical effects.*—Diuretic and diaphoretic.

(*c*) *Used* in dropsy and cutaneous diseases.

(*d*) *Dose.*—½ ounce to 1 ounce two or three times a day.

2019. Decoction of Logwood.

(*a*) Boil 10 drachms of sliced logwood in 1½ pint of water to a pint, and strain.

(*b*) *Therapeutical effects.*—Astringent and tonic.

(*c*) *Used* in diarrhœa and dysentery.

(*d*) *Dose.*—1 ounce to 2 ounces after each action of the bowels.

2020. Decoction of Barley — (Barley water).

(*a*) Wash 2½ ounces of pearl barley, then boil them in half a pint of water for a short time. Throw this water away, and pour on the barley 4 pints of hot water; boil *slowly* down to 2 pints, and strain.

(*b*) *Therapeutical effects.*—Soothing and nourishing.

(*c*) *Used* as a diluent drink in fevers, and in inflammation of mucous surfaces, especially those of the urinary organs.

2021. Decoction of Barley (*compound*).

(*a*) Boil 2 pints of barley water (see par. 2020) with 2½ ounces of sliced figs, 4 drachms of bruised fresh liquorice, 2½ ounces of raisins, and a pint of water, down to 2 pints, and strain.

(*b*) (*c*) The same as the last, but, in addition, laxative.

2022. Decoction of Poppyheads.

(*a*) Boil 5 ounces of bruised poppyheads in 5 pints of water for a quarter of an hour, and strain.

(*b*) *Therapeutical effects.*—Anodyne and soothing.

(*c*) *Used* as a fomentation in painful swellings and inflammations.

2023 Decoction of Oak Bark.

(*a*) Boil 10 drachms of oak bark bruised in 2 pints of water down to a pint, and strain.

(*b*) *Therapeutical effects.*—Astringent.

(*c*) *Used* as an injection in prolapse of the anus, and other relaxed conditions of mucous membranes.

2024. Decoction of Sarsaparilla — (*simple*) (*a*) Boil 5 ounces of sarsaparilla in four pints of water to two pints, and strain.

(*b*) *Therapeutical effects.*—Alterative, diaphoretic, and tonic.

(*c*) *Used* in cutaneous diseases, chronic rheumatism, and scrofula.

(*d*) *Dose.*—2 ounces, twice or thrice a day.

2025. Decoction of Sarsaparilla (*compound*).

(*a*) Mix four pints of boiling decoction of sarsaparilla, 10 drachms of sliced sassafras, 10 drachms of guaiacum-wood shavings, 10 drachms of bruised stick-liquorice, and 3 drachms of mezereon-bark; boil for a quarter of an hour, and strain.

(*b*) (*c*) (*d*) *Therapeutical effects.*—The same as the last, but warmer, and therefore better suited to weak stomachs.

2026. Decoction of Broom (*compound*).

(*a*) Take ½ an ounce of broom, ½ an ounce of juniper berries, and ½ an ounce of bruised dandelion, boil in a pint and a half of water down to a pint, and strain.

(*b*) *Therapeutical effects.*—Diuretic, and slightly aperient.

(*c*) *Used* in dropsy.

(*d*) *Dose.*—1½ ounce to 2 ounces, twice or thrice a day.

2027. Decoction of Dandelion.

(*a*) Boil 4 ounces of bruised dandelion in 1½ pint of distilled water to a pint, and strain.

(*b*) *Therapeutical effects.*—Diuretic, slightly aperient, and specially acting on the liver.

(*c*) *Used* in torpid conditions of the liver, jaundice, habitual constipation, &c.

(*d*) *Dose.*—2 or 3 ounces twice or thrice a-day.

2028. Digitalis.—A medicine in no case fit for domestic use.

2029. Dill Water.—Prepared from Dill seeds by distillation.

(*a*) *Physical properties.* — An aromatic odour, with a pungent agreeable taste.

(*b*) *Therapeutical effects.*—Carminative and stimulative.

(*c*) *Used* in the flatulence and gripings of children.

(*d*) *Dose.*—½ drachm to 1½ ounce.

2030. Dulcamara, Woody-nightshade. (See Decoction of.)

2031. Elaterium.—A powerful cathartic, entirely unfit for domestic use.

2032. Extract of Colocynth.

(*a*) (*b*) (*c*) See Colocynth.

(*d*) *Dose.*—5 to 10 grains.

2033. Extract of Gentian.

(*a*) Made from the gentian root.

(*b*) *Therapeutical effects.*—Tonic and stomachic.

(*c*) *Used* in dyspepsia.

(*d*) *Dose.*—5 to 20 grains.

2034. Extract of Henbane.—Prepared from the leaves of *Hyoscyamus niger*.

(*a*) *Physical properties.*—An extract of a dingy olive colour, and a peculiar, disagreeable smell; taste, bitterish and saline.

(*b*) *Therapeutical effects.*—Narcotic, anodyne, and antispasmodic.

(*c*) *Used* instead of opium, in irritability of the nervous system, or mucous surfaces, or in combination with purgatives to prevent their griping, as it does not cause constipation.

(*d*) *Dose.*—5 to 8 grains.

2035. Extract of Lettuce.

(*a*) *Physical properties.*—An extract of a dark brown colour, and narcotic odour; taste, bitter.

(*b*) *Therapeutical effects.*—Narcotic and diaphoretic.

(*c*) *Used* instead of opium, but not of any great service, as it is very uncertain in its operation.

(*d*) *Dose.*—5 grains to 10.

2036. Extract of Hop.

(*a*) *Physical properties.*—A dark-coloured bitter extract, without much smell.

(*b*) *Therapeutical effects.* — Tonic and sedative.

(*c*) *Used* in chronic dyspepsia and loss of sleep.

(*d*) *Dose.*—10 to 15 grains.

2037. Extract of Sarsaparilla (*liquid*).—Prepared from sarsaparilla, and used for the same purposes as the decoction. It is sold both as a *simple* and *compound* extract.

(*d*) *Dose.*—30 drops to 1 drachm two or three times a day, in water.

2038. Extract of Dandelion.—Prepared from the decoction of dandelion, and used for the same purposes.

(*d*) *Dose.*—1 scruple to 1 drachm.

2039. Galls.—Produced on the young branches of the gall-oak, from the puncture of the ovipositor of a small insect.

(*a*) *Physical properties.*—Two kinds are sold, one of which is inferior in quality, being of a blackish-blue or deep olive colour, with unequal warty surface; astringent bitter taste, and hard to break. The other kind is of a whitish colour, smooth surface, very austere bitter taste, being easily broken, less compact, and of larger size.

(*b*) *Therapeutical effects.*—Astringent and tonic.

(*c*) *Used* in protracted diarrhœa and intestinal hemorrhage; also in relaxed conditions of the fauces and rectum as a local application.

(*d*) *Dose.*—10 grains to 20, with aromatics, thrice a day. An infusion may be used for relaxation of the fauces, &c. An ointment is prepared by mixing 1 drachm of the [illegible] ree or four

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water for an hour, in a covered vessel, and strain.

(*b*) *Therapeutical effects.*—Stomachic and tonic.

(*c*) *Used* in dyspepsia and general debility.

(*d*) *Dose.*—1½ to 2 ounces two or three times a day.

2053. INFUSION OF LINSEED (*compound*).—Linseed tea.

(*a*) Macerate six drachms of bruised linseed and ten drachms of sliced fresh liquorice in a pint of boiling water, for four hours, near the fire in a covered vessel, and strain.

(*b*) *Therapeutical effects.*—Soothing, especially to the mucous passages.

(*c*) *Used* in chronic bronchitis and strangury.

(*d*) *Dose*, *ad libitum.*

2054. INFUSION OF QUASSIA.

(*a*) Macerate ten scruples of quassia sliced, in a pint of boiling water for two hours, in a covered vessel.

(*b*) *Therapeutical effects.*—Tonic and stomachic.

(*c*) *Used* in dyspepsia.

(*d*) *Dose.*—1½ to 2 ounces.

2055. INFUSION OF RHUBARB.

(*a*) Macerate 3 drachms of sliced rhubarb root in a pint of boiling water for two hours, in a covered vessel, and strain.

(*b*) *Therapeutical effects.* — Stomachic, tonic, and aperient.

(*c*) *Used* in dyspepsia accompanied with constipation, especially in combination with gentian.

(*d*) *Dose.*—½ ounce to 1½ ounce.

2056. INFUSION OF ROSES (*compound*).

(*a*) Put 3 drachms of the dried red rose leaves into a pint of boiling water, then add a fluid drachm and a half of diluted sulphuric acid. Macerate for two hours and strain the liquor; lastly, add six drachms of sugar.

(*b*) *Therapeutical effects.*—Astringent, refrigerant, and antiseptic.

(*c*) *Used* as a drink in fevers; also as a vehicle for sulphate of magnesia, quinine, &c.

(*d*) *Dose.*—1½ to 2 ounces.

2057. INFUSION OF SENNA (*compound*).—Senna tea.

(*a*) Macerate 15 drachms of senna leaves, and 4 scruples of bruised ginger, in a pint of boiling water for an hour in a closed vessel, and strain.

(*b*) *Therapeutical effects.*—Aperient.

(*c*) *Used* as a vehicle for more active purgatives, which it assists; or by itself as a mild purgative.

(*d*) *Dose.*—1 to 3 ounces.

2058. INFUSION OF VALERIAN.

(*a*) Macerate ½ an ounce of valerian in a pint of boiling water for half an hour, in a closed vessel, then strain.

(*b*) *Therapeutical effects.*—Antispasmodic and tonic.

(*c*) *Used* in hysteria.

(*d*) *Dose.*—1½ to 2 ounces.

2059. IODINE.

(*a*) *Physical properties.*—A material of a solid, opaque, bluish-black colour, semi-metallic lustre, pungent odour, similar to chlorine; acrid taste. It stains the skin of a yellowish-brown colour, destroys vegetable colours; with starch, strikes a blue colour; is sparingly soluble in water; soluble in rectified spirit.

(*b*) *Therapeutical effects.*—Stimulant, exercising a peculiar effect in producing absorption of unnatural growths.

(*c*) *Used* in enlarged glands, and generally in chronic enlargements of other bodies.

(*d*) *Dose.*—It is not fit for domestic use in this form, nor indeed in any other.

2060. IODIDE OF POTASSIUM. (See POTASSIUM, IODIDE OF.)

2061. IPECACUANHA, THE ROOT.

(*a*) *Physical properties.*—In pieces of three or four inches in length, with a resinous fracture; an acrid aromatic somewhat bitter taste, slightly nauseous; peculiar odour; yields its active principle to water, spirit, and wine.

(*b*) *Therapeutical effects.*—Emetic, diaphoretic, expectorant, and acting peculiarly on the liver.

(*c*) *Used* as an emetic; also as an expectorant in bronchitis, asthma, &c., as a nauseate in pneumonia, diarrhœa, dysentery; as a diaphoretic in various diseases, and in torpid liver, to promote its proper secretions.

(*d*) *Dose.*—As an emetic, 15 to 30 grains; as a nauseate 2 to 4 grains; as a diaphoretic 1 grain, with a small dose of opium; as an expectorant or for torpid liver, ½ to 1 grain.

2062. JALAP, THE ROOT.

(*a*) *Physical properties.*—Thin transverse slices, or round masses; solid, hard, and heavy; dark-grey colour, striated appearance; sickly smell; taste sweetish, but nauseous.

(*b*) *Therapeutical effects.*—Actively aperient and diuretic; generally producing nausea.

(*c*) *Used* in obstinate constipation, worms, dropsy; requires a carminative to prevent griping and nausea.

(*d*) *Dose.*—10 grains to 30.

2063. LEMON-PEEL, JUICE, AND ESSENCE.

(*a*) Produced from the lemons as imported.

(*b*) *Therapeutical effects.*—The *peel* is aromatic, stomachic, and slightly tonic. The *essence* is stimulant. The *juice* is anti-scorbutic, antiseptic, tonic and diaphoretic in large quantities.

(*c*) The juice is *used* with great success in gout and rheumatism. With soda and potass it forms the ordinary effervescing draught. (See Soda, Carbonate of.)

(*d*) *Dose* of the juice for gout, &c.—Half an ounce every two or three hours on an empty stomach.

2064. Lard is used externally in the preparation of ointments, caustics, &c.

2065. Liniment of Ammonia.

(*a*) To 1 fluid ounce of the solution of ammonia add 2 fluid ounces of olive oil, and shake together.

(*b*) *Therapeutical effects.*—Stimulant and rubefacient.

(*c*) *Used* in sore throat externally, also to chronic rheumatism, with friction.

2066. Liniment of Camphor.

(*a*) Dissolve 1 ounce of camphor in 4 fluid ounces of olive oil.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* in chronic rheumatism, with friction.

2067. Liniment of Camphor (*compound*).

(*a*) Dissolve 2½ ounces of camphor and 1 drachm of oil of lavender in 17 fluid ounces of rectified spirits of wine; then add 3 fluid ounces of the strong solution of ammonia, and shake well together.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* with friction in the same way as the simple liniment, but it is more powerful.

2068. Liniment of Soap.—Sold ready prepared by the druggists.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* in chronic rheumatism and neuralgia; and as a vehicle for other more active rubefacients.

2069. Liniment of Opium.

Sold ready prepared.

(*b*) *Therapeutical effects.*—Anodyne.

(*c*) *Used* in local pains, and to bruises.

2070. Liniment of Turpentine.

(*a*) Shake well together 2 ounces of soft soap, and an ounce of camphor, with 16 fluid ounces of the spirit of turpentine, until mixed.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* in paralytic affections and chronic rheumatism; also to burns and scalds.

2071. Liquor of Acetate of Ammonia.

(*a*) Add as much sesquicarbonate of ammonia to diluted acetic-acid (*distilled vinegar*), as will saturate it, which is evidenced by the cessation of the effervescence.

(*b*) *Therapeutical effects.*—Diaphoretic, cooling and diuretic.

(*c*) *Used* in all febrile conditions.

(*d*) *Dose.*—2 to 4 drachms.

2072. Liquor of Acetate of Lead.

(*a*) Sold by the druggists.

(*b*) *Therapeutical effects.*—Sedative and astringent when applied externally.

(*c*) *Used* as a lotion to inflamed surfaces when largely diluted with water. Goulard water is prepared from it, by adding a fluid drachm and a half of it and 2 fluid drachms of proof spirit to a pint of distilled water.

2073. Liquor of Potass.

(*a*) *Physical properties.*—A colourless fluid, inodorous, taste acrid and caustic, feels soapy between the fingers.

(*b*) *Therapeutical effects.*—Anti-acid, diuretic, alterative, soothing to the mucous membranes, when diluted.

(*c*) *Used* in acidity of the stomach and bowels; also in irritability of the stomach and of the bladder; and in cutaneous diseases.

(*d*) *Dose.*—10 drops to 30 in beer or bitter infusion.

2074. Magnesia, Carbonate of.

(*a*) *Physical properties.*—A solid, white, tasteless, inodorous powder, insoluble in water.

(*b*) *Therapeutical effects.*—Anti-acid and purgative.

(*c*) *Used* in dyspepsia with costiveness, in the constipation of children and delicate grown persons.

(*d*) *Dose.*—½ drachm to 1 drachm or 2. The solution is used very extensively, as prepared by Sir John Murray and Mr. Dinneford, with an excess of carbonic acid to hold the magnesia in solution. The dose is 1 drachm to ½ ounce or 1 ounce.

2075. Magnesia, Sulphate of.—Epsom salts.

(*a*) *Physical properties.*—Small pointed crystals of a transparent, colourless appearance; inodorous, with a disagreeable bitter taste; dissolves readily in water.

(*b*) *Therapeutical effects.*—Purgative.

(*c*) *Used* as a cooling laxative, washing the bowels out, but not searching them.

(*d*) *Dose.*—1 drachm to 1 ounce.

2076. Manna.

(*a*) *Physical properties.*—A pale yellowish white colour, and crystalline appearance; taste, sweet, but sickly; odour, slightly disagreeable. Soluble in water and alcohol.

(*b*) *Therapeutical effects.*—Mildly aperient.

(*c*) *Used* principally for infants, or to sweeten aperient draughts.

(*d*) *Dose.*—2 ounces for adults, 1 to 2 drachms for infants.

2077. Marsh Mallows.

(*a*) *Physical properties.*—A root; long cylindrical; grayish without, white within; inodorous; taste, sweetish.

(*b*) *Therapeutical effects.*—Soothing.

(*c*) *Used* to make a soothing drink in irritation of the mucous membranes, or as a fomentation; boiling the leaves and root to form it.

2078. Mint-water.—Prepared from peppermint or spear-mint.

(*a*) These are sold in the shops.

(*b*) *Therapeutical effects.*—Both are carminative and slightly stimulating. Spearmint-water is also diuretic.

(*c*) *Used* as a vehicle for other remedies.

2079. Mercury.—The pure metal is not used in medicine, except for the purpose of making the amalgam with silver introduced into decayed teeth.

2080. Mercury, Ammonio-chloride of.—White precipitate.

(*a*) *Physical properties.*—A white inodorous powder; insipid, insoluble in water and alcohol.

(*b*) *Therapeutical effects.*—Used externally only; it is detergent.

(*c*) *Used* for cutaneous diseases, and for destroying lice, &c., in its powdered condition.

2081. Mercury, Bichloride of.—Corrosive sublimate.

(*a*) Too powerful for domestic use, except for the purpose of destroying vermin (see page 238).

2082. Mercury, Chloride of.—Calomel.

(*a*) *Physical properties.*—A white semi-transparent crystalline mass, inodorous, insipid, and insoluble. Usually sold as a heavy white powder.

(*b*) *Therapeutical effects.* — Alterative, purgative, and producing absorption.

(*c*) *Used* in chronic diseases of the liver and general torpidity of the stomach and bowels; in dropsy, in combination with other medicines. A most dangerous medicine when employed by those who are not aware of its powerful effects.

(*d*) *Dose.*—1 grain twice a day as an alterative. 4 to 5 grains as an aperient, combined with, or followed by, some mild vegetable purgative.

2083. Mercury, Iodide and Biniodide of. Two strong and very powerful agents in effecting absorption; not adapted for domestic use, except in scald-head.

2084. Mercury, Nitric Oxide of.—Red precipitate.

(*a*) *Physical properties.*—A powder of a brilliant red colour, insoluble in water.

(*b*) *Therapeutical effects.*—Stimulant, externally.

(*c*) *Used* to old ulcers, and to heal indolent sores of all kinds, when made into an ointment with lard. (See Ointments.)

2085. Mercury, with Chalk.

(*a*) *Physical properties.*—A heavy bluish-gray powder, insoluble in water.

(*b*) *Therapeutical effects.*—Anti-acid, alterative, mildly laxative, and stimulating to the action of the liver.

(*c*) *Used* as a mild alterative and stimulant to the liver in children.

(*d*) *Dose.*—5 grains to 15 in the adult.

2086. Mixture of Acacia.—Mucilage.

(*a*) Rub 10 ounces of bruised acacia gum with a pint of boiling water, gradually poured on until dissolved.

(*b*) *Therapeutical effects.*—Soothing.

(*c*) *Used* to allay irritation of mucous membranes, as in bronchitis and inflammation of the bladder; also to suspend insoluble substances.

(*d*) *Dose.*—1 drachm to ½ ounce.

2087. Mixture of Ammoniacum.

(*a*) Rub 5 drachms of gum ammoniacum with a pint of distilled water, gradually added, until properly mixed.

(*b*) *Therapeutical effects.* — Stimulant, antispasmodic, expectorant.

(*c*) *Used* in chronic bronchitis, especially in old people, and asthma.

(*d*) *Dose.*—½ ounce to 1 ounce.

2088. Mixture of Almonds.—Emulsion of almonds, prepared from the confection or from fresh almonds. (See Almonds.)

2089. Mixture of Camphor.—Camphor mixture.

(*a*) Rub half a drachm of camphor with ten minims of rectified spirit; then add gradually a pint of distilled water, and strain through linen.

(*b*) *Therapeutical effects.* — Stimulating, antispasmodic, diaphoretic.

(*c*) *Used* as a vehicle for other remedies.

(*d*) *Dose.*—1 or 1½ ounce.

2090. Mixture of Chalk.

(*a*) Rub ½ ounce of prepared chalk and 3 drachms of sugar with a fluid ounce and a half of mixture of acacia, and 8 fluid ounces of cinnamon water.

(*b*) *Therapeutical effects.*—Anti-acid, absorbent, and astringent when given in diarrhœa.

(*c*) *Used* in diarrhœa, especially when united with aromatic confection and opium, or catechu.

2091. Mixture of Iron (*compound*).

(*a*) Rub 2 drachms of powdered myrrh and 1 drachm of carbonate of potass with a fluid ounce of spirit of nutmeg; to these, while rubbing, add 18 fluid ounces of rose-water, 2 drachms of sugar, and 2½ scruples of powdered sulphate of iron. Put the mixture in a well-stoppered bottle.

(*b*) *Therapeutical effects.* — Stomachic, astringent, tonic, emmenagogue.

(*c*) *Used* in chlorotic girls, and in all the defective secretions of young females.

(*d*) *Dose.*—1 to 1½ ounce.

2092. Mixture of Guaiacum.

(*a*) Rub 3 drachms of powdered guaiacum with half an ounce of sugar, and 2 drachms of powdered acacia; to these, while rubbing, add gradually a pint of cinnamon water.

(*b*) *Therapeutical effects.*—Stimulant and diaphoretic.

(*c*) *Used* in chronic rheumatism.

(*d*) *Dose.*—1 to 1½ ounce.

2093. Myrrh.—The gum-resin, usually powdered.

(*a*) *Physical properties.*—A powder of a yellowish-brown colour; an agreeable. peculiar odour; bitter and slightly aromatic taste; partially soluble in water; alcohol dissolves its resin; soluble in alkalies.

(*b*) *Therapeutical effects.*—Tonic, stimulant, expectorant, emmenagogue.

(*c*) *Used* chiefly with steel, internally; externally, as an ingredient in tooth-powder.

(*d*) *Dose.*—2 or 3 grains.

2094. Ointment of Creasote.

(*a*) Rub half a fluid drachm of creasote with an ounce of lard, until they are incorporated.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* in scald head, &c.

2095. Ointment of Galls (*compound*).

(*a*) Mix 6 drachms of finely powdered galls, 6 ounces of lard, and 1½ drachm of powdered opium.

(*b*) Astringent and anodyne.

(*c*) *Used* for hemorrhoids; but one quarter of the quantity of gallic acid answers much better.

2096. Ointment of Nitrate of Mercury.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* when diluted with spermaceti ointment in cutaneous diseases, and for the lids in weak eyes

2097. Ointment of Nitric Oxide of Mercury.

(*a*) Rub 1 ounce of finely powdered nitric oxide of mercury with 10 ounces of wax, and 6 ounces of lard.

(*b*) *Therapeutical effects.*—Stimulant.

(*c*) *Used* to indolent ulcers.

2098. Ointment of Iodide of Potassium.

(*a*) Dissolve 2 drachms of iodide of potassium in 2 fluid drachms of boiling distilled water, then mix with 10 ounces of lard.

(*b*) Stimulant, and producing absorption of glandular swellings, such as wens, &c.

2099. Ointment of Savine.

(*a*) Melt 3 ounces of white wax, with a pound of lard, and mix ½ a pound of bruised fresh savine, then express through linen.

(*b*) *Used* for dressing blisters to keep them open.

2100. Ointment of Sulphur (*compound*).

(*a*) Made of sulphur, white hellebore, and ointment of potass, with soft soap and lard.

(*b*) *Used* in itch.

2101. Ointment of Zinc.

(*a*) Mix 1 drachm of oxide of zinc with 6 drachms of lard.

(*b*) *Used* as a cooling, astringent, and drying ointment.

2102. Ointment of Iodide of Mercury.

(*a*) Mix from 30 grains to 1 drachm of iodide of mercury with 1 ounce of lard.

(*b*) *Used* in scald head, for which it is very efficacious.

2103. Olive Oil.

(*a*) *Physical properties.*—A transparent fixed oil, of a yellowish colour; inodorous, and without much taste; boils at 600 degrees Fahrenheit; congeals at 38 degrees.

(*b*) *Therapeutical effects.*—Soothing, and slightly aperient.

(*c*) *Used* in bronchial irritation; also as a vehicle for other medicines in the form of liniment.

(*d*) *Dose.*—1 to 2 drachms.

2104. Opium—The inspissated juice of the *Papaver somniferum.*

(*a*) *Physical properties.*—*Turkey opium* is in flat, compact, dry, heavy cakes, of a deep brown colour, with a light fracture; taste, nauseous, bitter, and pungent; odour, peculiar and unpleasant; *India opium* is less consistent, and more ductile. It is partly soluble in both water and alcohol, and very easily dissolved in vinegar and oil.

(*b*) *Therapeutical effects.*—Anodyne, antispasmodic, diaphoretic, and narcotic.

(*c*) *Used* in painful affections, unaccompanied by fever. In diarrhœa and all mucous irritations, but requiring great care, and scarcely fit for home use.

(*d*) *Dose.*—¼ to 1 grain.

2105. Oxymel of Squill.—Vinegar of squills, sweetened with honey.

(*a*) (*b*) (*c*) The same as squill.

(*d*) *Dose.*—1 to 1½ drachm.

2106. Pill of Aloes (*compound*).

(*a*) *Physical properties.*—Made up of aloes, gentian, and oil of carraway.

(*b*) *Therapeutical effects.*—Stomachic, purgative, and emmenagogue.

(*c*) *Used* in dyspepsia, costiveness, and amenorrhœa.

(*d*) *Dose.*—5 to 15 grains.

2107. Pill of Aloes, with Myrrh.

(*a*) *Physical properties.*—Made up of aloes, myrrh, saffron, and soap.

(*b*) *Therapeutical effects.*—Stimulant, cathartic, emmenagogue.

(*c*) *Used* with sulphate of iron in amenorrhœa.

(*d*) *Dose.*—5 to 10 grains.

2108. **Pill of Colocynth** (*compound*).

(*a*) Made up of aloes, scammony, cardamoms, extract of colocynth, and hard soap.

(*b*) *Therapeutical effects.*—A warm purgative.

(*c*) *Used* in habitual costiveness.

(*d*) *Dose.*—5 to 15 grains.

2109. **Pill of Iron, with Myrrh.**

(*a*) Made up of myrrh, soda, and sulphate of iron, mixed with treacle.

(*b*) *Therapeutical effects.* — Stomachic, tonic, and emmenagogue.

(*c*) *Used* in dyspepsia, chlorosis, hysteria.

2110. **Pill of Galbanum** (*compound*).

(*a*) Made up of galbanum, myrrh, sagapenum, asafœtida, and soap.

(*b*) *Therapeutical effects.*—Antispasmodic and emmenagogue.

(*c*) *Used* in hysteria and amenorrhœa.

(*d*) *Dose.*—10 to 15 grains.

2111. **Pill of Mercury.**—Blue pill.

(*a*) The metal partially oxydated, and mixed with confection of roses.

(*b*) *Therapeutical effects.*—Alterative and purgative, acting specially on the liver.

(*c*) *Used* in dyspepsia, torpidity of the liver, and constipation.

(*d*) *Dose.*—1 to 5 or 6 grains.

2112. **Pill of the Chloride of Mercury** (*compound*).

(*a*) Made up of chloride of mercury (*calomel*), oxysulphuret of antimony, and powdered guaiacum, with treacle.

(*b*) *Therapeutical effects.* — Alterative, purgative, and diaphoretic.

(*c*) *Used* in hepatic affections, &c.

(*d*) *Dose*—1 grain to 5.

2113. **Pill of Rhubarb** (*compound*).

(*a*) Made up of rhubarb, aloes, and myrrh.

(*b*) *Therapeutical effects.*—Stomachic, and a warm aperient.

(*c*) *Used* in dyspepsia and constipation.

2114. **Pill of Soap** (*compound*).

(*a*) Made up of opium, liquorice, and soft soap.

(*b*) *Therapeutical effects.*—The same as opium.

(*c*) *Used* like opium.

(*d*) *Dose.*—5 grains to 10.

2115. **Pill of Squill** (*compound*).

(*a*) Made up of squill, ginger, gum ammoniacum.

(*b*) *Therapeutical effects.*—Expectorant.

(*c*) *Used* in asthma and bronchitis.

(*d*) *Dose.*—5 grains to 10.

2116. **Pitch, Burgundy.** — The impure resin of the Norway *spruce fir*.

(*a*) *Physical properties.*—A tenacious mass, of fragrant odour, semi-transparent, and unctuous.

(*b*) *Therapeutical effects.*—Stimulant and rubefacient.

(*c*) *Used* externally in the form of plaster in bronchitis, hooping-cough, &c.

2117. **Potass, Acetate of.**

(*a*) *Physical properties.* — A colourless crystalline, pulverulent salt.

(*b*) *Therapeutical effects.*—Diuretic, and mildly aperient.

(*c*) *Used* in febrile diseases, dropsy, and jaundice.

(*d*) *Dose.*—20 to 30 grains.

2118. **Potass, Bicarbonate of.**

(*a*) *Physical properties.* — Inodorous and colourless crystals.

(*b*) *Therapeutical effects.*—Anti-acid, diuretic, and soothing.

(*c*) *Used* in acidities of the stomach and bowels.

(*d*) *Dose.*—5 to 25 grains.

2119. **Potass, Bitartrate of.**

(*a*) *Physical properties.*—An inodorous white acid powder, feeling gritty to the hand or teeth.

(*b*) *Therapeutical effects.*—Diuretic and slightly purgative; cooling, with any vegetable acid.

2120. **Potassium, Iodide of.**

(*a*) *Physical properties.* — Solid, white, inodorous, deliquescent crystals; taste, saline and somewhat acrid; very soluble in water, and in six parts of spirit.

(*b*) *Therapeutical effects.* — Stimulant, alterative, and diuretic; also causing absorption of unnatural growths.

(*c*) *Used* in goitre and other glandular affections; also in various defective or poisoned conditions of the blood.

(*d*) *Dose.* — 2 to 8 grains three times a day, united with at least 2 ounces of fluid, such as decoction of sarsaparilla.

2121. **Potassium, Sulphuret of.**

(*a*) *Physical properties.*—A salt, of a liver colour; inodorous when dry, but when moist, has the smell of rotten eggs.

(*b*) *Therapeutical effects.*—Stimulant, expectorant, diaphoretic. Externally, possessed of the same properties as sulphur.

(*c*) *Used* in scrofula and cutaneous diseases; also, externally, in itch.

(*d*) *Dose.*—5 to 10 grains.

2122. **Peruvian Balsam.**

(*a*) *Physical properties.* — Of the consistence of honey; colour, brown; agreeable smell, and hot, acrid taste.

(*b*) *Therapeutical effects.*—Stimulant expectorant, externally applied to indolent ulcers.

(c) *Used* in catarrh and chronic rheumatism.

(d) *Dose.*—15 minims to half a drachm.

2123. PLASTER OF AMMONIACUM, WITH MERCURY.—Useful in indolent swellings of glands.

2124. PLASTER OF BELLADONNA.—Applied to the skin when afflicted with neuralgia.

2125. PLASTER OF CANTHARIDES.

(a) Spread on leather, linen, or paper, to produce a blister.

2126. PLASTER OF LEAD.

(a) Spread on linen or leather for excoriation of the skin, &c.

2127. PLASTER OF SOAP.

(a) Useful to protect the soft parts from pressure.

2128. POULTICE OF CHARCOAL.

(a) Macerate for a short time before the fire 2 ounces of bread in 2 fluid ounces of boiling water; then mix, and gradually stir in 10 drachms of linseed meal; with these mix 2 drachms of powdered charcoal, and sprinkle a drachm on the surface.

(b) Antiseptic, and digestive.

(c) *Used* in gangrene.

2129. POULTICE OF HEMLOCK.

(a) Make a poultice of linseed meal; then add 1 ounce of extract of hemlock previously softened with water, or 4 ounces of the fresh leaves scalded and bruised.

(b) *Therapeutical effects.*—Anodyne and discutient.

(c) *Used* in glandular swellings, and cancerous sores.

2130. POULTICE OF YEAST.

(a) Mix 5 ounces of yeast, with an equal quantity of water, at 100 degrees; with these stir up a pound of flour, so as to make a poultice; place it by the fire till it swells, and use.

(b) Stimulant, emollient.

(c) *Used* to indolent abcesses and sores.

2131. POULTICE OF LINSEED.

(a) Put into a basin enough meal to form a poultice, making a hole in its centre; then pour upon it boiling water to fill that hole, and stir rapidly with a kitchen knife. This will generally be sufficient to make the poultice of the proper consistency. It is always better to add enough water at first, as it is not so smooth if added piecemeal.

(b) *Therapeutical effects.*—Stimulant, and yet soothing.

(c) *Used* for abscesses and ulcers when inflamed.

2132. POULTICE OF MUSTARD.

(a) Make either a bread or a linseed-meal poultice, then sprinkle over it enough flour of mustard to conceal its surface, and wet it with a little boiling water. Some people add hot vinegar to wet it with.

(b) *Therapeutical effects.*—Stimulant, and often inclined to blister the skin.

(c) *Used* as a rapid counter-irritant.

2133. POMEGRANATE, the root, and bark of the fruit.

(a) *Physical properties.*—The roots are yellow-coloured, heavy, and knotted, with a faint smell and astringent taste.

(b) *Therapeutical effects.*—Astringent.

(c) *Used* for removing worms.

(d) *Dose.*—½ to 1 drachm.

2134. POWDER OF ANTIMONY (*compound*).

(a) *Physical properties.*—A dull, white, insipid powder.

(b) *Therapeutical effects.*—Diaphoretic and alterative.

(c) *Used* in febrile diseases.

(d) *Dose.*—3 to 10 grains.

2135. POWDER OF CHALK WITH OPIUM—(*compound*).

(a) A mixture of chalk, spice, and opium.

(b) *Therapeutical effects.*—Anti-acid and anodyne.

(c) *Used* in diarrhœa, but requires caution on account of the opium.

(d) *Dose.*—5 to 10 grains.

2136. POWDER OF IPECACUANHA (*compound*).—Dover's powder.

(a) *Physical properties.*—Compound of opium, ipecacuanha, and sulphate of potass.

(b) *Therapeutical effects.*—Diaphoretic, anodyne, and narcotic.

(c) *Used* to produce perspiration in rheumatism and dysentery, &c.

(d) *Dose.*—5 to 10 grains.

2137. PELLITORY OF SPAIN.

(a) *Physical properties.*—A root possessing a sharp acrid taste, leaving a burning sensation in the mouth.

(b) *Therapeutical effects.*—Stimulant, sialogogue.

(c) *Used* to fill decayed teeth in toothache.

2138. QUININE, SULPHATE OF.

(a) *Physical properties.*—Colourless, inodorous, lustrous, bitter efflorescent crystals, totally soluble in water previously acidulated with sulphuric acid.

(b) *Therapeutical effects.*—Stomachic, stimulant, febrifuge, and tonic.

(c) *Used* in general debility, neuralgia, and after fever.

(d) *Dose.*—1 to 3 grains.

2139. RHUBARB.—The root, whole and powdered.

(a) *Physical properties.*—The root is in firm flattish, irregular pieces, occasionally pierced with large holes; colour, bright yellow, externally; fracture, rugged, presenting red and white veins; odour, peculiar and aromatic; taste, bitter, astringent, and somewhat nauseous; imparts its virtue to water and alcohol. The powder is of a reddish yellow.

(*b*) *Therapeutical effects.*—Purgative and stomachic; acting on the small bowels.

(*c*) *Used* as a mild purgative in the constipation of children and adults.

(*d*) *Dose.*—10 to 30 grains.

2140. SQUILL.—The sea onion.

(*a*) A root of a pear shape, covered with several thin dry tissues, under which are oval, flaky, red, or white scales; odour pungent; taste, acrid and bitter. Imparts its virtue to vinegar, spirits, and water.

(*b*) *Therapeutical effects.* — Expectorant, emetic, diuretic.

(*c*) *Used* in chronic bronchitis and asthma.

(*d*) *Dose.*—2 to 6 grains.

2141. SENNA.—The leaves.

(*a*) *Physical properties.*—Leaves of a pale green colour; leaflets broad, lanceolate; the two sides unequal; odour faint, somewhat like green tea; taste nauseous and bitter. Yields its properties to spirit and water.

(*b*) *Therapeutical effects.*—Cathartic.

(*c*) *Used* in constipation, and to lower the system. Made into the infusion.

(*d*) *Dose.*—5 grains to 25, rubbed down with ginger and sugar.

2142. SAFFRON.

(*a*) A colouring matter obtained from the *Crocus sativus.*

2143. SILVER, NITRATE OF (*fused*).

(*a*) *Physical properties.*—Sold in solid fusible cylindrical moulds. When recently prepared, white and semi-transparent, gradually becoming black on exposure to the air. Soluble in water.

(*b*) *Therapeutical effects.*—Tonic and antispasmodic, when taken internally; but requiring the utmost caution, and not adapted for domestic use. Externally, caustic and stimulating.

(*c*) *Used* in irritability of the stomach, epilepsy, &c., but is apt to produce blueness of the skin. Externally, as the ordinary caustic.

(*d*) *Dose.*—¼ to 1 grain, in pill.

2144. SPERMACETI.

(*a*) *Physical properties.* — White, semi-transparent, pearly crystals, without taste or smell.

(*b*) *Therapeutical effects.*—Soothing.

(*c*) *Used*, internally, in irritation of the mucous membrane of the bowels, and bronchitis. Externally, in the making of ointments.

(*d*) *Dose.* — Half to one drachm, rubbed down with yolk of egg, or mucilage, or mixed with brown sugar.

2145. SODA, BICARBONATE OF.

(*a*) *Physical properties.*—A heavy white powder, without smell, and tasting slightly soapy. Entirely soluble in water.

(*b*) *Therapeutical effects.*—Anti-acid.

(*c*) *Used* in the manufacture of effervescing draughts, and for acidities of the stomach.

(*d*) *Dose.*—5 to 30 grains.

2146. SODA, SULPHATE OF.—Glauber's salts.

(*a*) *Physical properties.*—Crystals, of an exceedingly bitter taste, and without smell. Soluble in water.

(*b*) *Therapeutical effects.*—Purgative and diuretic.

(*c*) *Used* in costiveness.

(*d*) *Dose.*—½ to 1 ounce.

2147. SPIRIT OF NITRIC ETHER. — Sweet spirits of nitre.

(*a*) *Physical properties.* — A colourless, transparent, volatile, inflammable fluid, of an ethereal odour.

(*b*) *Therapeutical effects.* — Cooling, diuretic, and diaphoretic; also slightly antispasmodic.

(*c*) *Used* in febrile diseases, dropsy, and spasm.

(*d*) *Dose.*—20 to 60 minims.

2148. SPIRIT OF SULPHURIC ETHER.

(*a*) Prepared by mixing sulphuric ether with rectified spirit and ethereal oil.

(*b*) *Therapeutical effects.*—Stimulant and antispasmodic.

(*c*) *Used* in faintness, nervousness, lassitude, &c.

(*d*) *Dose.*—30 to 60 drops.

2149. SPIRIT OF AMMONIA (*aromatic*).

(*a*) *Physical properties.*—A compound, containing carbonate of ammonia and aromatics, with spirit; and possessing an aromatic, warm, and alkaline taste. Miscible with water, which it renders milky.

(*b*) *Therapeutical effects.*—Stimulant and cordial.

(*c*) *Used* as the ordinary diffusible stimulus in faintings and hysteria; also added to senna to prevent griping.

(*d*) *Dose.*—30 to 60 drops.

2150. SPIRIT OF AMMONIA (*fetid*).

(*a*) *Physical properties.*—The same as the above, with the addition of assafœtida.

(*b*) *Therapeutical effects.*—Stimulant and antispasmodic.

(*c*) *Used* in hysterical fits.

(*d*) *Dose.*—30 to 60 drops.

2151. SPIRIT OF HORSERADISH (*compound*).

(*a*) *Physical properties.*—Mix 20 ounces of sliced horseradish, 20 ounces of dried orange peel, 5 drachms of bruised nutmegs, and a gallon of bruised spirit, with 10 pints of water; then distil a gallon with a slow fire.

(*b*) *Therapeutical effects.*—Stimulant, diaphoretic, and diuretic.

(*c*) *Used* internally in dyspepsia, and in paralysis, externally rubbed into the skin.

(*d*) *Dose.*—1 to 2 drachms.

2152. SPIGELIA.—Indian or Carolina Pink.

(*a*) *Physical Properties.*—In bundles of the entire plant, about twenty inches long.

(*b*) (*c*) A very useful remedy for round worms.

(*d*) *Dose.*—10 to 20 grains of the powder, given fasting; or ½ an ounce to 3 ounces of the infusion made by pouring one pint of water on half an ounce of the root.

2153. SULPHATE OF IRON.—Green vitriol.

(*a*) *Physical properties.*—A salt of a bluish-green colour, and metallic taste; soluble in water.

(*b*) *Therapeutical effects.*—Tonic, astringent, emmenagogue.

(*c*) *Used* in scrofula, amenorrhœa, and dyspepsia.

(*d*) *Dose.*—1 to 3 grains.

2154. SYRUP of orange-peel, saffron, mulberry, poppy, buckthorn, red poppy, tolu, ginger, and roses, and compounds of sugar in the form of syrup with the drugs mentioned above.

2155. SYRUP OF IODIDE OF IRON is used in order to preserve the iodide of iron from injury.

(*b*) *Therapeutical effects.*—Alterative, and affording the effects of iron and iodine.

(*c*) *Used* in scrofulous diseases, and in cachectic states of the system.

(*d*) *Dose.*—½ a drachm to 1 drachm.

2156. TURPENTINE, SPIRIT OF.

(*a*) *Physical properties.*—A limpid, colourless fluid, of a strong odour and hot taste, exceedingly inflammable.

(*b*) *Therapeutical effects.*—Stimulant, diuretic, cathartic, and destructive to worms.

(*c*) *Used* in hemorrhages, lumbago, &c., and to destroy worms; also externally as a rubefacient.

(*d*) *Dose.*—10 drops to 30 internally, or 2 to 4 drachms mixed with castor oil as a vermifuge; but it should not be given internally without the sanction of a medical man.

2157. TINCTURE OF BENZOIN, (*compound*). *Physical properties* and *use* the same as Benzoin.

(*d*) *Dose.*—20 to 30 drops.

2158. TINCTURES OF COLUMBA, GENTIAN, CASCARILLA, CINCHONA, and CARDAMOMS, all possess the same virtues as the drugs from which they are derived.

(*d*) *Dose.*—1 drachm.

2159. TINCTURE OF CAMPHOR, (*compound*). Paregoric elixir.

(*a*) A tincture containing camphor, opium, anise, and benzoic acid.

(*c*) *Used* in coughs.

(*d*) *Dose.*—1 drachm.

2160. TINCTURE OF CANTHARIDES.—Unfit for domestic use, except as a rubefacient in combination with soap-liniment, or for the hair with turpentine.

2161. TINCTURE OF HENBANE.—(See HENBANE.)

Dose.—20 to 30 minims.

2162. TINCTURE OF IODINE.—(See IODINE.)

Dose.—5 to 15 minims.

2163. TINCTURE OF LAVENDER (*compound*).

Dose.—30 to 60 minims.

2164. TINCTURE OF MYRRH.

Dose.—30 to 60 minims. Useful as a wash for the teeth.

2165. TINCTURE OF OPIUM.—Laudanum.

Dose.—5 to 20 minims.

2166. TINCTURE OF QUININE.

Dose.—30 to 40 minims.

2167. TINCTURE OF RHUBARB (*compound*). A very warm, useful preparation.

Dose.—2 to 4 drachms.

2168. TINCTURE OF VALERIAN (*compound*).

Dose.—30 to 60 minims, in dyspepsia and hysteria.

2169. TINCTURE OF GINGER.

Dose.—1 drachm.

2170. TORMENTIL.

(*a*) *Physical properties.*—An irregularly knotty root, furnished with numerous fibres; inodorous; very astringent.

(*b*) *Therapeutical effects.*—Astringent.

(*c*) *Used* as an injective in the form of decoction.

2171. TOLU, BALSAM OF.

(*a*) *Physical properties.*—Of considerable consistence; reddish-brown in colour; odour, very pungent; taste, warm and sweetish.

(*b*) *Therapeutical effects.*—A stimulant expectorant.

(*c*) *Used* in chronic coughs, and also to wounds and ulcers.

(*d*) *Dose.*—10 grains.

2172. VALERIAN.

(*a*) *Physical properties.*—Several long, slender, dusky-brown fibres, issuing from one head; strong fetid odour; warm, bitterish, subacid taste.

(*b*) *Therapeutical effects.*—Antispasmodic, tonic.

(*c*) *Used* in hysteria.

(*d*) *Dose.*—1 drachm.

2173. WALNUTS are popularly used for relief in violent and protracted constipation of the bowels.

(*a*) Put small green walnuts in salt and water for nine days; change the water every third day; then place them in a sieve and let them stand until they begin to turn black. Put them into a jug, and pour over boiling water, and let them stand until next day; then replace them in the sieve to drain. Make a thin syrup and boil them in it three or four times; then make a thick syrup, put in the walnuts, and boil them six minutes. Wet some paper with brandy to cover them, and tie all tightly down with bladder. The longer they are kept the more efficient they have generally proved. They ought to be kept at least ten years.

Dose.—One large or two small ones.

2174. **WINE, OF POTASSIO-TARTRATE OF ANTIMONY.**—Antimonial wine.

(*a*) Dissolve two scruples of potassio-tartrate of antimony in a pint of sherry.

(*b*) *Therapeutical effects.* — Emetic and diaphoretic.

(*c*) *Used* in inflammatory diseases.

(*d*) *Dose.*—15 to 60 minims.

2175. **WINE OF COLCHICUM.** See COLCHICUM.

(*a*) *Dose.*—20 to 40 minims.

2176. **WINE OF IRON.**

(*a*) Digest for 30 days an ounce of iron wire in two pints of sherry.

(*b*) *Therapeutical effects.*—Stomachic and tonic.

(*c*) *Used* the same as other steel medicines.

(*d*) *Dose.*—30 to 60 minims.

2177. **WINE OF OPIUM.**

(*a*) Prepared with opium and spices.

(*b*) *Therapeutical effects.*—Stimulant, afterwards anodyne.

(*c*) *Used* chiefly as an application to the eyes.

(*d*) *Dose.*—10 minims to 20.

2178. **ZINC, CHLORIDE OF.**

A powerful drug, but scarcely adapted for domestic use, except as a disinfectant, for which it is sold in solution.

2179. **ZINC, OXIDE OF.**

(*a*) *Physical properties.*—A light white powder.

(*b*) *Therapeutical effects.*—Tonic, antispasmodic; externally, astringent and drying.

(*c*) *Used* in chorea, &c.; and externally, as a drying and cooling application.

(*d*) *Dose.*—1 to 3 grains.

2180. **ZINC, SULPHATE OF.**—White vitriol.

(*a*) *Physical properties.* — Transparent crystals.

(*b*) *Therapeutical effects.*—Tonic, astringent, and emetic.

(*c*) *Used* as a wash or as an emetic.

(*d*) *Dose.*—As an emetic, 10 grains to 30.

TABLE OF PROPORTIONATE DOSES FOR DIFFERENT AGES, FROM GAUBIUS, &c.

						Examples.		
Under	½	year	1-15th of a full dose		Grs.	¾	1⅓	2
"	1	"	1-12th	"	"	1	1⅔	2½
"	2	"	1-8th	"	"	1½	2½	4
"	3	"	1-6th	"	"	2	3⅓	5
"	4	"	1-5th	"	"	2½	4	6
"	7	"	1-3rd	"	"	4	7	10
"	14	"	1-half	"	"	6	10	15
"	20	"	2-3rds	"	"	8	13	20
Above	21	"	the full dose		"	12	20	30
At	63	"	11-12ths	"	"	11	18	28
"	77	"	5-6ths	"	"	10	16	25
"	100	"	2-3rds	"	"	8	13	20

The following is another Table:—

Age—Years	80	65	50	25-40	20	16	12	8	5	2
Doses	⅔	¾	⅞	1	⅔	½	⅓	¼	⅙	⅛

Months	12	6	2 to	1
Doses	1-5th	1-8th	1-15th	1-24th

Adult women require about 3-4ths the full dose of men.

Sex, temperament, constitutional strength, and the habits and idiosyncrasies of individuals must be taken into account. Nor does the same rule apply to all medicines. *Calomel*, for instance, is generally borne better by children than by adults; while *opium* affects them more powerfully, and requires the dose to be diminished considerably below that indicated in the above tables.

SECT. 3. — CLASSIFICATION OF REMEDIES, AND RECEIPTS FOR THEIR ADMINISTRATION.

2181. **ANTI-ACIDS** are medicines which are intended to correct acidity of the stomach and digestive organs, by chemically neutralizing it; their action is only temporary and palliative, as they do not strike at the cause, but only remove the effect; indeed, by constant use, they appear to increase the quantity of acid developed, and thus to aggravate the disease. Whenever they are given for any length of time, vegetable tonics should be combined with them, so as at the same time to improve the tone of the stomach, and prevent the formation of acid. When there exists much flatulence, in combination with acidity, a volatile alkali (ammonia), must be adopted, so as to act in a gaseous form, and thus neutralize the gaseous acid which distends the stomach. In acidity of the lower bowels, attended with distressing distension, magnesia or lime may be used advantageously, inasmuch as they are less likely than soda or ammonia to be absorbed before they reach those parts. Where the ordinary and predominating acid of the urine is in excess, carbonate of potass is the best remedy, inasmuch as its combination with lithic acid is more soluble than is the case with soda.

(*a*) Bicarbonate of ammonia, 5 grains, dissolved in an ounce of infusion of columba or gentian, and given two or three times a day. (In flatulent dyspepsia.)

(*b*) Carbonate of soda, 5 grains; aromatic spirit of ammonia, 25 drops; tincture of gentian, 1 drachm; camphor mixture, 1 ounce. Mix. (In dyspepsia, from intemperate living.)

(*c*) Chalk mixture, 1 ounce; tincture of catechu, ½ drachm; tincture of opium, 8 to 12 drops; aromatic confection, 10 grains. Mix. (In diarrhœa, with acidity.)

(*d*) Lime-water, ½ ounce; aromatic confection, 10 grains; almond emulsion, 1 ounce. Mix. (In pain of the stomach, with acidity.)

2182. ANTHELMINTIC, OR WORM MEDICINES, are remedies which possess the property of destroying intestinal worms, or of expelling them from the bowels. It must, however, be remembered that it is not only necessary to get rid of the worms, but also of their eggs; but so long as the bowels are in a weak condition it appears that these are either generated or developed in some way. It is therefore desirable, after removing them, to improve the general health of the system by stomachics and tonics.

(*a*) Calomel, 1 to 5 grains; jalap, 2 to 12 grains; scammony ½ to 1 grain. Mix, and give once or twice a week, fasting. (For round worms.)

(*b*) Infusion of spigelia (Indian pink), ½ to 1 ounce, to be given once or twice a week, fasting. (For round worms.)

(*c*) Linseed-oil, 2 or 3 ounces, mixed with 1 or 2 drachms of spirit of turpentine, to be thrown up into the rectum once or twice a week. (For thread worms.)

(*d*) Half a drachm to 1 drachm of finely-powdered glass or tin may be given fasting, mixed up with butter in a paste, two or three times a week, followed by a dose or two of castor-oil. (For round worms.)

(*e*) The remedies for tape worms are of too powerful a nature to be given by the inexperienced.

2183. ANTISPASMODICS indicate their use by their name; but as spasm is caused in a variety of ways, so it requires very different remedies for its removal. Sometimes one, sometimes another, will be the proper one of the following list—viz., narcotics, sedatives, stimulants, nauseants, aperients, stomachics, and tonics; as well as blood-letting and the hot-bath. But, besides the above, there are certainly some few remedies which are peculiarly antispasmodic in their action without possessing any of the above qualities, such as asafœtida, galbanum, and valerian; and these may therefore be considered more especially to belong to this class of remedies.

(*a*) Compound galbanum pill, 5 to 1 grains, two or three times a day.

(*b*) Tincture of lavender and fetid spirit of ammonia, of each ½ to 1 drachm; camphor mixture, 1 ounce. Mix, and give when the spasms are urgent.

2184. ASTRINGENTS are those medicines which produce contraction of the fibres with which they come in contact. They are more especially useful in restraining discharges of blood and mucus.

(*a*) Diluted sulphuric acid, 20 to 30 minims; tincture of cardamom, 30 minims; infusion of roses, 1 ounce. Mix, and give twice a day in discharges of blood or mucus.

(*b*) Decoction of logwood 1½ ounce; compound tincture of camphor, 30 to 60 drops. Mix, and give after each loose motion.

(*c*) Tincture of matico, 30 to 40 minims; chalk mixture, 1 ounce. Mix, and give as directed at (*b*).

2185. APERIENTS, called also purgatives and cathartics, are those medicines which increase or hasten the evacuations from the bowels. They vary greatly in their nature and power, some acting chiefly upon the upper bowels, as rhubarb; others upon the whole course, as jalap and senna; while a third set chiefly act upon the lower bowels, as aloes. Scammony is a very irritating medicine, and is therefore called a *drastic* purgative, together with some others. Epsom and Glauber salts, as well as jalap, produce a large secretion of watery fluid, which washes out the whole canal, and often does nothing more; so that one chief purpose of this kind of medicine is omitted. All aperients when intended to act energetically should be given on an empty stomach; as, for instance, when it is supposed that there is a lodgment in the bowels, or if the whole system is loaded, and requires a reduction. In such a case a strong and generally searching aperient is demanded, and nothing here answers so well as mercury united with some aperient drug or drugs, which produce an effect upon the whole canal. Neither aloes nor rhubarb by themselves are sufficient for this purpose, because they might either of them leave a part of the canal still loaded; but together they seem to do their duty extremely well. In the following list will be found several useful formulas for aperients, when required in this way. Unfortunately, however, these purgative drugs act solely by their power of irritation, and, as a consequence, they weaken the tone of the mucous membrane, and produce nausea, loss of appetite, and flatulence when frequently exhibited. In addition to which they leave the bowels, after each dose, in a worse condition than before, and so go on gradually increasing the evil, until at last the unhappy victim is rendered perfectly miserable; such is a very common event in England, and especially among those who lead sedentary lives, and who expect still to be able to indulge in the luxuries of the table by the aid of a blue pill and black draught; which remedies for a time have the desired effect, but a heavy reckoning has afterwards to be paid in the shape of some one or other of the many forms of dyspepsia so common in this country. No one can possibly safely carry off large quantities of food without exercise, if they are taken for years together. The choice is, therefore, between dyspepsia, occasioned by purgatives, or else that form established by nature to diminish the appetite, or perhaps a worse disease in the shape of organic mischief in the liver or kidneys. Aperients are, therefore, perhaps the best remedies for such a state of things, short of temperance in living, which some people seem to put entirely out of the question. But supposing the mischief done, and a habit of constipation established, it becomes a question how this may best be relieved. It is generally in this country brought about in some way or other by the constant use of purgatives, though I have known some cases in which it appeared to be congenital, and the constipation to have existed from the earliest period of life. In every case, however, the difficulty is the same, and must be met; and I will now endeavour to show the best mode of accomplishing this troublesome task. In the first place, blue pill and calomel, although highly valuable as rare resources against obstinate constipation, with torpid liver, are objectionable altogether as daily, or even as weekly, medicines, because they destroy the tone of the mucous membrane, and also act in a most injurious manner upon the nerves, being a fertile source of neuralgia. Senna is a very useful and mild aperient, but its bulk renders it unfit for anything but the infusion or electuary, both of which are nauseous in the extreme. Saline medicines produce flatulency and loss of tone, and cannot long be employed without injury. In fact, whatever is put into the stomach in an empty state, has a strong tendency to weaken its tone. Nature teaches us by example that animals seek a change of food when out of order, and our own stomachs prompt us to follow in their wake; thus, green vegetables are always welcome to the strong stomach when the bowels are confined, but the weakly one is incapable of digesting them. If, then, we imitate the natural instinct, *and mix with our food* some mild *vegetable* aperient, which shall also act on the liver, we shall avoid all irritation of the stomach, and yet produce a regular action of the bowels. In this way these medicines may be considered as supplying the place of green food, or as acting in the same way, but more energetically. No one would complain of cabbage or carrots being taken daily all through the year, or even of figs, prunes, or other fruit. But the moment it is advised that a daily dose of rhubarb should be mixed with the food, a certain amount of horror is evoked, which varies with the degree of mischief which the abuse of drugs may have occasioned. I fully believe that blue pill, or senna, or jalap, or aloes, *given as a medicine* on an empty stomach, is highly prejudicial to health; but I am as fully convinced, from 20 years' experience, that rhubarb and ipecacuanha may be administered *as a part of the daily food*, not only without injury, but with positive benefit, as compared to the state without them. But they must be given in the form of pills, and swallowed either with, or immediately after, the food, and not before, or long after, because in the former case the stomach is empty, and in the latter it is full of half-digested food, and therefore inclined to be captious, and easily disgusted or nauseated. If those who suffer from torpid liver and bowels will only give this method a trial, they will bless the day they first began it, and will abandon blue pills, black draughts, &c., as perfectly unnecessary and unfit for the office which they profess to fill. The rule is to take as much ipecacuanha as the stomach will bear (using from half a grain to a grain), together with as little rhubarb as will act gently on the bowels, made into one or more pills, and given either with breakfast or dinner, or both, according to the necessity for aperients. This should be persevered in as long as the bowels continue to be confined, diminishing or increasing the dose of rhubarb as may be wanted. The action is not very rapid, and some days are required at first before it is fully developed, after which it is readily kept up by the regular use of the pills, a formula for which is given below. By the use of them I have succeeded in numberless cases in entirely superseding mercury, and in curing neuralgia, dyspepsia, headaches, and a host of those evils attendant upon constipation, and its usual remedies.

(*a*) Powdered rhubarb, 3 to 15 grains; powdered ipecacuanha, ½ to 1 grain; powdered ginger, ½ a grain; water to form 1, 2, or 3 pills. To be taken with breakfast or dinner, or both. (See remarks above.)

(*b*) Blue pill, 3 to 5 grains, compound rhubarb pills, and extract of colocynth, of each 3 to 8 grains. Mix, and form into 2, 3, or 4 pills.

(*c*) Sulphate of magnesia and tincture of senna, of each 1½ to 2 drachms, infusion of senna, 1½ to 2 ounces. Mix, and form a draught. (This is the common black draught.)

(*d*) Powdered jalap, 10 grains; sub-carbonate of soda, 8 grains; manna, 1 drachm; tincture of senna, 2 drachms; Epsom salts, 2 drachms; infusion of senna, 1½ ounce. (This is a very powerful aperient draught.)

(*e*) Epsom salts, ½ to 1 ounce; cream of tartar, ¼ ounce; half a lemon (juice and peel); boiling water, half a tumbler. When nearly cold this makes a cooling aperient.

(*f*) Calomel, 3 grains; jalap and rhubarb, of each 10 grains. Mix, and make into an aperient powder, the whole or a part of which may be given as an active aperient to any child or young person, according to the table given at page 673.

(*g*) Compound decoction of aloes, 1 ounce; infusion of senna, ½ an ounce; tincture of rhubarb, 2 ounces. Mix.

(*h*) Castor oil and tincture of rhubarb, of each a dessert-spoonful or table-spoonful. A very mild and safe aperient in colicy pains.

2186. BLISTERS are produced either by spreading the blistering plaster upon leather or calico, and applying this to the skin for several hours (3 to 12, according to the age), or by using the blistering tissue in the same way, or by painting on the solution of Spanish fly in vinegar (*acetum cantharidis*), or by applying and confining the strong liquor of ammonia by means of a piece of spongio-piline. Either of these remedies produces a blister of the cuticle, beneath which is a quantity of serum. It may be dressed either with spermaceti cerate spread on lint or linen, which soon heals the blister; or with savine cerate, which keeps it discharging, that is, if the cuticle is removed; or if very much inclined to heal with the blistering ointment, but the great thing is to remove the cuticle. A mustard poultice may also be made to act as a blister to a delicate skin.

2187. CAUSTICS are scarcely within the scope of the domestic dabbler in medicine except in some few cases, such as the proud flesh which sometimes makes its appearance in indolent sores. This may be known by its elevation *above the surface* in the shape of large, red, flabby granulations, which hang over the healthy skin, and are never beneath its level. To these the solid nitrate of silver is the safest remedy, and no one is likely to do harm with it if the above precaution is adopted; but if it is applied to sores which are below the level of the surrounding skin, great mischief may be, and often is, done. Alum, blue vitriol, and pounded white sugar are used in the same way, but are quite as likely to be mismanaged, and are not nearly so efficacious.

2188. DIAPHORETICS are medicines which increase the insensible perspiration. When they act very energetically, they are called *sudorifics*. During the administration of these remedies it is essential that the surface of the body should be kept warm and for this purpose wool is generally employed in the shape of flannel or blankets. Exposure to cold air is also to be avoided as well as the drinking of cold water, though this in strong constitutions is often productive of extensive perspiration, and many people take a glass of cold water at night before going to bed with the view of producing perspiration when they feel that they have taken cold. In order to check excessive sweating, it is a bad plan to expose the body while bathed in it, or while clothed with wet garments; but these should at once be removed and dry ones of a lighter character put on, or else the clothing should very gradually be made lighter, avoiding any sudden transition which would be likely to produce a chill.

(*a*) Antimonial powder (compound powder of antimony), 5 grains taken at night, with a basin of warm gruel or white wine whey.

(*b*) Dover's powder (compound powder of ipecacuanha), 5 to 10 grains, taken at night, when there is no fever and the bowels are open.

(*c*) Liquor of acetate of ammonia, 1 ounce; ipecacuanha wine, 10 minims; sweet spirit of nitre, 20 minims. Mix, and give at night, or oftener if necessary.

2189. DIURETICS augment the secretion and promote the flow of urine. In slight stoppages of this secretion there is no great harm in trying mild diuretics, such as the following; but where the disturbance is great it is better to leave the case in the hands of a competent authority, as much mischief may easily be done from the selection of an improper remedy, as, for instance, a stimulating diuretic in case of inflammation of the kidneys.

(*a*) Nitrate of potass, 10 grains; sweet spirits of nitre, 1 drachm; spearmint water, 1 ounce. Mix, and give once or twice a day.

(*b*) Imperial (see page 369), of which half a tumbler may be given, with or without a table-spoonful of gin, two or three times a day.

(*c*) A strong infusion of the peel of the young branches of the elder tree may be made, with the addition of half an ounce of cream of tartar to each pint; and of this infusion 2 or 3 ounces may be given three times a day, in suppression of urine.

2190. EMBROCATIONS are intended to relieve local pains, either by counter irritation or by the anodyne effects of their ingredients, or by aiding the friction which cannot long be maintained without some such application.

(*a*) Liquor of ammonia, tincture of opium, spirits of turpentine, and olive oil (or soap liniment), of each equal parts. Useful for rheumatism or any local pains.

(*b*) Flour of mustard, ½ ounce; vinegar, boiling, 3 ounces. Mix, and rub into the part to produce counter-irritation.

(*c*) Laudanum, chloroform, and soap liniment, in equal proportions, will often relieve local pains.

(*d*) Chloroform alone may be applied, sprinkled on a piece of spongio-piline, and applied to the part in neuralgia; care being taken not to inhale its vapour long together.

(*e*) All embrocations may be applied with good effect by wetting with them the inner surface of spongio-piline, and keeping it to the part. In this way, as the ammonia cannot evaporate, embrocations made with it are much more active.

2191. EMETICS are used to produce vomiting; but it is rarely the case that they are desirable in the hands of those who are not fully qualified to judge of the propriety of giving them. When, however, a child is known to have swallowed any foreign body, or to have evidently disordered the stomach by grossly improper food recently taken, a simple emetic is quite justifiable; or in case of croup, when no time is to be lost, it may be had recourse to. The only justifiable drug for this purpose, is powdered ipecacuanha, or ipecacuanha wine, which may be given in proportion to the age (see table at page 678), or mustard.

(*a*) Powdered ipecacuanha, 15 to 30 grains.

(*b*) Ipecacuanha wine, 2 drachms to ½ an ounce.

(*c*) A tea-spoonful of mustard mixed in a pint of water, and taken in four portions, at intervals of a few minutes.

(*d*) In producing vomiting, if the above remedies do not act in a quarter of an hour, they may be repeated every quarter until the desired effect is produced.

2192. EMOLLIENTS are those remedies which relax the tone of parts and make them more soft and yielding. Poultices and warm-water fomentations are chiefly those which may be adopted in domestic practice, and they will be found serviceable in many slight cases of inflammation from various causes. Bread or linseed-meal poultice is an excellent emollient, as also is the fomentation made with poppy-heads, and applied by means of flannel wrung out in it. (See Poultice, in last section.)

2193. EXPECTORANTS excite and promote a discharge of mucus from the lining membrane of the bronchial tubes, thereby relieving inflammation or irritation. They act in two ways:—first, by removing the constriction of the vessels, on which principle nausea seems to act; and secondly, by stimulating these vessels, their natural secretions, when deficient, are restored; or when they are in an unhealthy state they are changed to a natural condition.

(*a*) Ipecacuanha wine, 3 drachms; syrup of tolu, 5 drachms; mucilage of acacia, 1 ounce; water, 6 ounces. Mix, and give two table-spoonfuls every four hours.

(*b*) Pill of squill and compound ipecacuanha powder, of each 1 drachm. Mix, and divide into twenty-four pills, one to be taken every four or six hours.

(*c*) Paregoric elixir, ipecacuanha wine, of each 3 drachms; olive oil, 5 drachms; oxymel of squills, 3 drachms. Mix, and give a tea-spoonful when the cough is troublesome.

(*d*) Roughly powdered spermaceti mixed up with syrup of poppies and vinegar in equal proportions, is an admirable expectorant remedy in the common coughs of children.

(*e*) Powdered ipecacuanha, 1 grain, and powdered opium half a grain, made into a pill and given at night, is sometimes a useful pill to quiet those troublesome coughs which come on at that time; but it must only be given to those who are known to be able to take opium.

2194. FEBRIFUGE (see REFRIGERANT).

2195. NARCOTICS produce in the first place a stimulating effect upon the nervous system, soon followed by a depression of those powers accompanied by sleep, or by coma if given in sufficient quantities. They should not be dabbled in by those who have not had a medical education, as great mischief is likely to accrue; and even in the hands of persons who are obliged to have recourse to them they are often exceedingly dangerous to life. No formula is, therefore, here given.

2196. Refrigerants act by reducing the heat of the body, by means of their action on the heart and large vessels. They are sometimes called *febrifuges*.

(*a*) Carbonate of soda or potass, 20 grains; sweet spirits of nitre, 30 drops; syrup of orange-peel, 1 drachm; water, 1 oz. Mix, and give with 15 grains of citric or carbonic acid, or a table-spoonful of lemon juice, while effervescing. (This is the common medical effervescing draught.)

(*b*) Nitrate of potass, 1 drachm; sweet spirit of nitre, 3 drachms; tincture of henbane, 2 drachms; liquor of acetate of ammonia, 1 ounce; camphor mixture, enough to fill up an 8-ounce phial. Give two tablespoonfuls every four hours. (A good common febrifuge mixture.) If cough is present, add ten or fifteen drops of ipecacuanha wine to each dose.

2197. Sedatives primarily depress the vital powers without inducing any previous excitement, and from this action being the reverse of stimulants, they are sometimes termed *counter-stimulants*. But the only remedies of this class which are at all safe to be trusted in the hands of non-medical persons are tobacco and diluted hydrocyanic acid. The former of these is only manageable by means of smoking, which, though prejudicial as a general practice, may sometimes be used with advantage. Hydrocyanic acid is a violent poison in large doses, but in very small doses, cautiously used, it is one of the most innocent of all remedies, and may be attempted without risk in the sickness which accompanies pregnancy, or in other ordinary cases in which a sedative is required.

(*a*) Diluted hydrocyanic acid, 2 or 3 minims; syrup of orange peel, 1 drachm; distilled water, 1 ounce. Mix, and give occasionally, the intervals never being less than six hours.

(*b*) Diluted hydrocyanic acid, 2 drachms; glycerine, 3 to 6 drachms; water, 7 ounces. Mix, *and use as a lotion*, taking great care that it is not drunk by mistake. (Useful in obstinate itchings without apparent cause.)

2198. Stimulants are either general or special, that is to say, they either act on the whole system or on individual parts. Thus, alcohol and ammonia act on the whole system, while mercury stimulates the glands and absorbents. This class of medicine is, however, scarcely fit for domestic use.

(*a*) Sesquicarbonate of ammonia, 5 to 8 grains; compound tincture of lavender, 30 minims; sulphuric ether, 30 minims; camphor mixture, 1 ounce. Mix. (A very stimulating draught in case of emergency.)

2199. Stomachics are medicines which act by improving the tone of the stomach, the following being the best for ordinary use:—

(*a*) Liquor of potass, 1 drachm; tincture of cardamoms, ½ ounce; infusion of rhubarb or senna, 1½ ounce; infusion of gentian or cherayta, 5 ounces. Mix, and give 1 ounce twice or thrice a day.

(*b*) Trisnitrate of bismuth, 5 grains, made into a pill with confection of roses, and given for water-brash or for organic disease of the stomach, sometimes joined with an anodyne.

(*c*) Diluted hydrochloric acid and diluted nitric acid, of each 1 to 2 drachms; syrup of orange-peel, ½ ounce; infusion of orange-peel, 7 ounces. Mix, and give two tablespoonfuls three times a day. Useful where alkalies have been given for a long time, or sometimes in ordinary cases where they do not agree.

(*d*) Extract of dandelion and extract of gentian, of each half a drachm; powdered ginger, 8 grains. Mix, and divide into 16 pills, two to be taken twice or thrice a day.

2200. Styptics are used externally to stop the flow of blood from cut or torn surfaces.

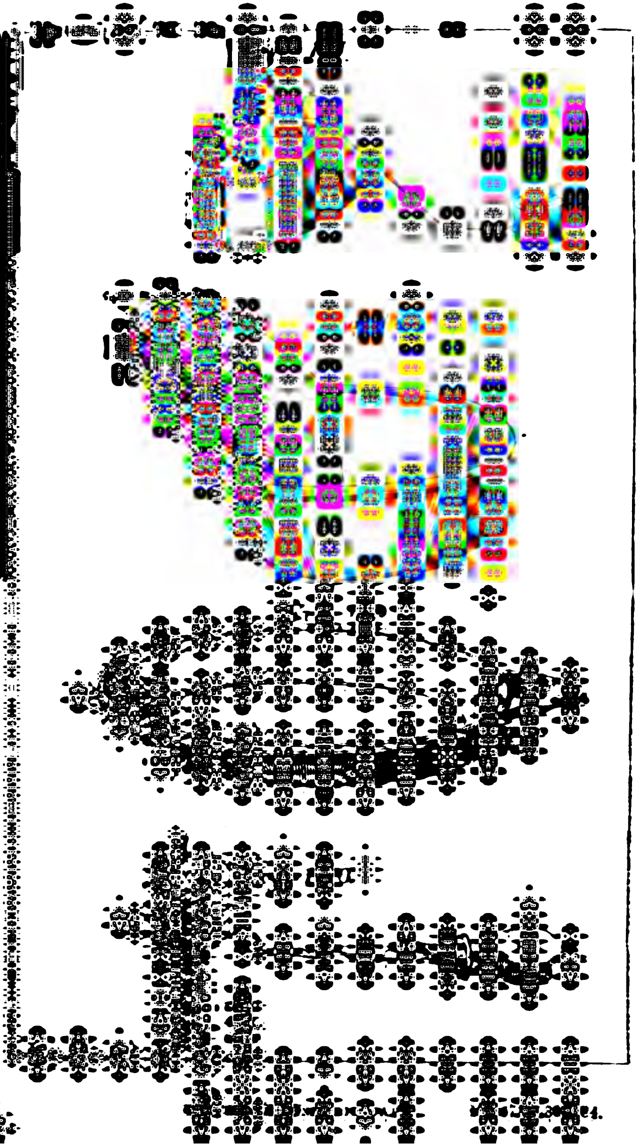
(*a*) Matico leaves, scalded, are the most useful for this purpose.

2201. Tonics are substances, the continued use of which, in debility of the system imparts strength and vigour without causing any sudden excitement. They are generally stimulants as well, inasmuch as they rouse the vital energies; but the excitement is not so rapid as in those called general stimulants, and the effect, also, is more permanent. No medicines require more tact in their selection, and in suiting them to the time when they are to be adopted, for it is far more easy to do harm than good in applying them. Thus, it is generally a rule that quinine will not be borne with a dry tongue, and yet in some cases of typhus fever if the physician waits for this feature changing before giving quinine, he will wait until his patient is departed to the next world. Some tonics, as arsenic, which are very powerful, but easily misapplied, are omitted here altogether.

(*a*) Disulphate of quinine, 1 grain; diluted sulphuric acid, 3 minims; water, or infusion of roses, 1 ounce; tincture of orange-peel, 30 minims. Mix, and give twice or thrice a day.

(*b*) Tincture of cinchona (compound), 1 drachm; decoction of cinchona (yellow), 1½ ounce. Mix, and give two or three times a day.

[illegible] p. 679, 680.



(*c*) The nitro-muriatic acid mixture, given under stomachics, at par. 2199, is also a powerful tonic.

(*d*) Carbonate of iron, 1 drachm, twice a day, in neuralgia.

(*e*) Compound tincture of bark, 1 drachm; infusion of cascarilla, 1 ounce. Mix.

2202. UNGUENTA, commonly called ointments, are surgical appliances for different purposes, and may be cooling, or stimulating, or digestive, or drying. These are found under the head of Ointments in the last section.

SECT. 4.—MEDICAL HYGEINE.

2203. Under this head are included bathing in all its varieties, change of air, change of scene, and, in fact, the means in general calculated to restore health irrespective of medicine.

2204. BATHING, as adapted to promote health, has been alluded to at page 542. It remains now to describe the several kinds of baths and bathing used in the removal of disease, such as *sea bathing*, *hot baths*, *vapour baths*, *cold baths*, *shower baths*, *hip* or *sitz baths*, and the various measures of this nature adopted at the hydropathic establishments.

2205. TEMPERATURE OF THE VARIOUS BATHS.

The Cold bath is from	50 to 60	deg.
" Tepid "	70 to 80	"
" Hot "	98 to 106	"
" Vapour, not inspired ...	106 to 150	"
" Do. inspired	100 to 130	"

2206. THE UTENSILS necessary for bathing are the following:—

(*a*) THE HOT BATH is a vessel of an oblong shape, constructed so as to hold enough water to cover the whole body, with the exception of the head. The shape shown at *fig.* 184 is that most generally adopted, inasmuch as it serves the purpose for which it is intended with as little expenditure of water as is consistent with the due performance of its duties. It may be fixed in a room specially kept for the purpose, and called a bath-room; or it may be entirely detached, and intended to be filled with warm water by hand. Or, again, it may be so arranged as to contain, as a part of its apparatus, a stove which shall heat its water, and which stove may also be supplied with gas or with coal as its fuel. All these several points of difference make a great alteration in the price, as shown at pages 66 and 67, where a scale is given of baths, as fixed and supplied with hot and cold water, as well as those furnished with stoves. The gas bath may be made at a price as low as £7, but then it takes half-an-hour to heat its water, while the bath constructed by Mr. Defries, and alluded to at page 64, will heat forty-five gallons of water in six minutes, and is consequently most valuable as a ready means at all times of procuring this aid. A strong and useful general bath is shown at *fig.* 185, being intended as a small slipper bath, heated by a copper furnace, and having also attached a shower bath. The price, without the furnace, is £7; and with both that and the shower bath, £9 9s. It is very often desirable to combine the use of hot water to the body with cold to the head, and for this purpose the bath shown in *fig.* 185 is very well adapted, and in a cheap form.

(*b*) VAPOUR BATHS are intended to apply the vapour of hot-water, either medicated or not, to the skin, and for this purpose a vessel must be constructed with a steam-pipe, as at *fig.* 187. This may be placed upon a common fire, and then the steam-rose being slipped under a cane-bottomed chair, in which the patient sits, a loose cloak or blanket is thrown round the body, sometimes including the head also, and the bath is set in action.

(*c*) HIP OR SITZ BATHS are vessels shaped like that shown at *fig.* 188, and include the hips only, the head and shoulders emerging on one side and the legs on the other.

(*d*) THE SPONGING BATH is more calculated for retaining health, than for removing disease, and is merely a large shallow vessel (*fig.* 189), adapted to contain a small quantity of water, and to prevent the splashing of it from wetting the floor. It is also made in India-rubber.

(*e*) THE SHOWER BATH is a small vessel, with a perforated bottom, which is suspended over the shoulders either by hand (*fig.* 186) or as a part of an apparatus (*fig.* 185). A cord is pulled in the latter mode which liberates the water, and it falls in a shower on the head and shoulders.

2207. USE OF BATHS.—These various utensils, or baths, are calculated to supply the requirements of all, or any, of the following kinds of bathing, or baths.

(*a*) SEA-BATHING, whether hot or cold, is intended to restore the tone of the system when it has been reduced by any cause, such as fever, or mental anxiety, &c. It does not, however, always produce the desired effect, and in some cases more harm is done than good, especially when each act of bathing is continued for too long a time. Medical advice should, in such cases, always be obtained, defining the exact number, temperature, &c. In many cases, after a severe disease, one or two tepid baths should be used before bathing in the sea-water of the natural temperature.

(*b*) HOT BATHS, including also those called warm baths, which are the lowest of the class in point of temperature, are exceedingly valuable in relieving certain diseases, by producing perspiration, and thus acting *for the time* upon the circulating system. The first effect of a hot bath is to raise the action of the heart to a high degree, producing throbbing of the vessels of the head, and in some cases mischief in the brain. After a time a profuse perspiration breaks out over the whole body; and this may be kept up for some hours by means of plenty of warm blankets. Warm baths seem to soothe the general nervous system, and are of great use in spasms of any kind, as well as in the convulsions of young children, caused by irritation; but, in order to produce this effect, the body must be submitted to the action of warm water for at least fifteen or twenty minutes, and sometimes for half an hour. In the case of infants, however, more than five or ten minutes will seldom be borne without fainting. Hot baths are by no means a class of agents to be trifled with, and in medical cases where there is time to obtain it, regular advice should be had recourse to before using them. Sometimes, however, in convulsions, there is no possibility of procuring this at once, and in such case a hot bath is the remedy least likely to be improperly applied. The temperature at which a hot bath should be used varies according to the nature of the disease for which it is employed, and to the peculiarities of the individual. Thus, some people find 100 degrees uncomfortably cold, while others can hardly endure this heat. To some a bath at 108 degrees would be quite dangerous, while others enjoy water at 120 degrees. But, on the average, it will be found that when a soothing effect is required, either for the skin or for internal organs, the water should be only *warm*, that is, from 97 degrees to 100 degrees; while, if a violent perspiration is wanted, or if spasm or congestion of an internal organ are to be relieved, it should be raised to 102 degrees or to 108 degrees, and the body should be immersed in it for at least half an hour, unless faintness is produced before the expiration of that period. After coming out of the bath, if perspiration is not desired, it is better to dress rapidly, clothe rather warmly, and then to take a gentle walk, after which there will be little inclination to break out. But if a perspiration is the object of the bath, bed is the best place for its development, and a very hot blanket should be wrapped round the naked body, with more on the top, so as to act at once by retaining the heat imbibed in the bath, and, also, that generated by the body, in consequence of the increased action of the heart. After a few hours' perspiration, it is generally desirable to stop it, and then the blanket may be taken off, and the night clothing put on. A very good plan is to make up the bath-bed above the usual one, putting on all blankets required for the purpose quite independent of it, so that when the object is attained, the night clothes being slipped on, the ordinary bedding is quite warm from the heat of the body above it, and yet it is preserved dry.

(*c*) The Hip, or Sitz Bath as the hydropathists call it, is a valuable remedy, either hot or cold, according as it is required. When used hot it allays spasm, or irritation about the bladder or lower bowels, or any of the organs within the pelvis, and the body should for this purpose be immersed in it for at least half an hour. When cold, constituting the ordinary *sitz bath*, it is highly bracing, and should be used only for a very short time. A very useful form of sitz bath has lately been introduced, consisting in a constant stream of water introduced in the middle by attaching a water-pipe, and the superfluous water passing off by a waste-pipe.

(*d*) The Sponging Bath is described at page 679, being seldom used for the cure of diseases.

(*e*) Shower Baths are constantly used to relieve congestion of the brain, which they do partly by causing a shock to the whole of the nervous system, and partly by causing a reaction and consequent increased supply of blood to the vessels of the skin of the head and face, by which the brain inside is relieved. In severe cases it is better to put the feet in hot water, or sometimes the lower part of the body, for which the bath shown at fig. 135 is well adapted. It is, however, seldom that invalids are justified in using these means without medical advice.

2208. The Hydropathic Measures connected with bathing are, in addition to the constant use of the sponging bath, or the occasional use of the sitz-bath, which are as old as the hills—1st, *the packing*, or feather-bed bath; 2nd, *the wet sheet;* and, 3rd, *the compress*, which are certainly novelties peculiar to the followers of Preissnitz.

(*a*) The Packing is conducted by first stripping the patient, and then enveloping him carefully in a wet sheet, after which a blanket is wrapped closely round the whole body, followed by more, according to the weather, and, in some cases, a feather-bed being placed over all. The arms are folded close to the sides, and the head and face only are at liberty, and in this state the patient is left for a period varying from one hour to two, or sometimes even longer than that. During this time the bath-man supplies small quantities of cold water for drinking;

and in a short time reaction should, and generally does, come on, causing an immense secretion from the skin, followed also by an increased flow of limpid urine. It may be said that this bath is similar in its effects to the common hot bath; but there is this difference, that the increase of temperature is entirely owing to the natural power of the body, and not to the heat developed by the water. So that afterwards the system is benefited by this natural restorative process, and the heat-making organs are inclined to resist the influences of climate and weather to a greater extent than before. At all events, the remedy is a very powerful one, and by frequent repetitions a great reduction of the bulk of the body is effected, together with, in many cases, a marked effect upon the skin, evidenced by boils, which are called critical. A vast amount of humbug has been connected with this remedy; but, nevertheless, in skilful hands, it is a most extraordinary one, and capable of being made of great use in many complaints, but not fit to be attempted without the sanction of those who are well acquainted with its peculiar effects.

(*b*) The Wet Sheet is, in my opinion, very little superior to cold sponging, and its effect appears to be identical with it. The reactionary power is just the same, and the only difference is a trifling one, consisting in the smaller abstraction of heat by its means than by sponging. There is, however, the advantage that it is more rapidly applied, and altogether it is perhaps a convenient form of causing a healthy glow. The sheet is dipped in cold water and wrung out with the hands, after which it is folded closely over the whole person while standing, and held there for a few seconds. A coarse towel is afterwards rapidly used with the aid of a bathman or woman, and then the clothes are put on and a walk enjoined.

(*c*) The Wet Compress consists in a small towel folded and dipped in water, and afterwards wrung out tolerably dry. This is then applied to the part affected by means of tapes, covering it with a large dry towel, in the folds of which a layer of oil-silk is inserted. The compress is worn continually, and wetted again and again at stated periods. It produces in course of time an inflammation of the skin, with boils, which most probably is of service in certain internal diseases; but I have seldom seen any great good derived from it. In ordinary sore throat, however, I have often known great benefit from a compress applied round the neck on the first appearance of it, but in other cases the effect has been injurious rather than beneficial, so that I look upon this remedy as a very doubtful one.

(*d*) The Packing appears to me to be the great novelty in hydropathy, and excepting this agent there is little in the system, over and above the forced supervision of diet and exercise, which is well maintained in all establishments for the purpose.

2209. Change of Air and Scene are too well known as aids to medicine to need any remarks here.

2210. The Advantage of Ventilation, Draining, and Lighting have already been insisted on, at pages 78, 104, and 119.

2211. Friction is of the greatest importance in removing certain diseased conditions. It acts in two ways—first, upon the skin by bracing it and causing it to resist atmospheric changes, and to carry on its secretions duly; and, 2nd, by bracing and stimulating the muscles to which the friction is immediately applied.

(*a*) Friction of the Skin is useful for the purposes alluded to above, and also as a means of counter-irritation, so as to relieve the adjacent parts from the state of irritation or inflammation in which they exist. For this purpose the hand is the best organ, either with or without the aid of an embrocation or liniment. The human hand has also great power in soothing the nerves of the skin, when used smoothly, slowly, and without undue pressure; but great tact is required for this purpose, and a soft but not moist hand. Flesh-brushes or horse-hair gloves are excellent in aiding the action of the hand.

(*b*) For Stimulating Muscles, friction must be applied with some degree of force, acting deeply so as to reach beyond the skin. In this way the spine in slight curvature may be restored, taking care always to rub the muscles which lie on the convex parts of the curvature, and omitting the concavities. Whenever the spine is bent into a lateral curvature, two curves are invariably established, in the form of the letter S or its reverse, but not often to that extent. In using friction here, it is only necessary in the first case to rub on the left-hand side above and on the right below, while in the second case the friction must be on the right-hand side above and on the left below. With this rule, and by watching her daughters' backs, placing them occasionally flat on their faces to examine them, the careful mother may often stop incipient curvature, allowing always in addition a period of an hour in the middle of the day for rest, while the body is placed flat upon the floor, without any support for the head, and lying on the back. If this caution with regard to the back is attended to, the shoulders are almost sure to keep their places in point of relative height, and may be disregarded except as to their forwardness, causing what is called "round-shoulders," which are best combatted by constant supervision, or the use of the back-board when the child refuses a willing co-operation.

SECT. 5.—POPULAR FALLACIES.

2212. **PHRENOLOGY, HOMŒOPATHY, MESMERISM, AND SPIRIT-RAPPING** may well be classed together as impositions upon the credulity of the public, which have held their way for a time, and then pass away. Some have more foundation than others, but all have been alike made the vehicle for obtaining money under false pretences. Phrenology is now a dead letter, though its leading principles are founded in truth; but in consequence of the absurd extent to which its practice was carried, it has been rejected by the public entirely. Mesmerism, again, though capable of doing much, and affording most extraordinary phenomena, was in the same way lost in the mire of deceit, and is now seldom heard of. Spirit-rapping has just died a natural death, being founded upon fraud *in toto*, and therefore having had a very short life, while homœopathy drags along a feeble existence, and only being suffered to live from the abuse to which regular medicine has been exposed in bygone years. I am certainly inclined to agree with the celebrated statement in the "Medico-Chirurgical Review," that medicines, or the use of drugs, on the whole, have done as much harm as good to mankind; but because the improper use of them has led to mischief, there is no reason why we should discard what is good, and place our dependence upon a system which has no foundation whatever. By all means avoid physic whenever it can be done without, but at the same time eschew humbug in all its branches, and if this rule is carried out homœopathy will undoubtedly be included in it. I do not mean to say that all those who practise homœopathy are deserving of the title, but if it is not applicable to them, I am afraid they must wear a cap which may not please them as well. I say this as the result of close observation of the treatment by infinitesimal doses, and not without careful deliberation and experimental research. One thing is clear, that the system professes to be built upon certain observations, begun by Hahnemann upon himself, of the *effects of homœopathic doses upon the human body in health*; and yet I have never found any man professing homœopathy who could tell me to what class any globules presented to him for examination belonged, although allowed to analyse them, or try their effects upon his own body or any other. Now, if they produce certain effects, they must be capable of detection by them, and so the experimentalist ought to be able to say what they are or to what *class of remedies* they belong. This, however, they cannot do—nor even will they, as far as my observations go, attempt the feat; and until they can go as far as this, it is a farce to say that there is any virtue whatever residing in their globules. To assert that I have myself tried them in my own person without experiencing any effects, is simply met with the remark, that all are not influenced alike; but when the offer is made to test their powers by submitting to their own observation certain globules as prepared by themselves, and it is rejected as beyond their scope, the so-called science falls to the ground as devoid of all pretensions to the support of an honest man. Certainly, unless a homœopathist can tell me among a number of bottles of globules, after any length of time that he may desire, which contains nux vomica, which sulphur, and which charcoal, or any other preparations used by them, I must refuse my belief, especially when I have reason to know that strong medicines are constantly used by them in cases of real danger. It may be all very well to say that it is better to cure a patient with globules, by acting on his imagination than by drugs, but that is not a true statement of the case—the question is, whether it is honest to offer to the public to cure them by a certain mode, which is entirely inert, and yet to adopt another whenever it is necessary. For myself, I have always found that when patients are treated with honesty, and told that medicine is not required, they are too happy to escape its disagreeables, and to have recourse to less nauseous means. The world in our day has plenty of knaves in it, but the fools are not so common as they used to be; and even the former, however they may like to practise upon others, are very fond of being treated honestly themselves; and, on the principle of "setting a thief to catch a thief," are the first to detect imposition.

SECT. 6.—INVALID DIET.

2213. **IN COOKING FOOD, &c., FOR THE INVALID** great art is required, because the palate is morbidly acute, or disinclined to strong flavours of any kind. Thus it often happens, that seasoning which is relished in a state of health is loathed under disease; and the cook who is not aware of this fact will be almost sure to displease her employers. Hence it is that the nurse who understands the kind of cookery which is fitted for the sick will generally succeed better than the most finished cook, because she knows by experience that all rich flavours are sure to turn the stomachs of her charge. Chicken is for this reason so generally liked by the sick, because its flavour is mild, while the dark and high flavoured meat of game or ducks would be turned out of the room as soon as submitted to the nose, without even having the honour of a taste. Fat should be most carefully avoided in all animal-broths, such as mutton-broth or beef-tea; onions, garlic, and other herbs, except, perhaps, parsley, are also objectionable in the sick-room; and even the faintest flavour of the first in bread sauce will seldom be tolerated. Pepper may be used to some extent when not forbidden, and also salt, but beyond these seasonings it is seldom safe to venture far. Cloves and cinnamon, as well as nutmeg, are liked by some and disliked by others, as also are the flavours of caraways and allspice. Lemon-peel gives a clean flavour, as does orange-peel, and may generally be used for the purpose of giving a slight taste to sweets, or puddings; but even of these a smaller quantity than usual will suffice. With regard to adding wine in making jellies, it must always be ascertained whether it is forbidden, for in many cases jelly without wine would be advantageous, while the addition would be altogether wrong. The following list of receipts comprises those which are peculiarly applicable to the invalid; those which are also employed in ordinary cookery being to be found in the chapters devoted to that subject.

2214. Receipts for Articles of Diet, &c., Suited to Invalids:—

(*a*) Beef-tea.—Take one pound of lean beef, pick *all* the fat off; cut it into small pieces the size of the end of the thumb, and score it still further to let out the gravy; put it in an enamelled saucepan with a quart of water, two cloves, eight to twelve peppercorns, and half a tea-spoonful of salt. Simmer for three or four hours, and skim it *as long* as either scum or fat rises, or else it curdles. In cases of *extreme* debility, one pound and a half of beef may be used. Before serving, absorb every globule of fat with silver paper.

Another Mode (very grateful in convalescence, when there is no tendency to diarrhoea). Put into a preserving jar alternate layers of beef, cut into small pieces, and sliced turnips; when the jar is filled, place it in a water-bath or slow oven, and let it remain for two or three hours; then drain off all the tea, using a little pressure to assist the operation, and let it stand till cold, when any fat may be taken off, or if wanted directly, it may be removed while hot with silver paper.

(*b*) Soup for Invalids.—Take six pounds of shin of beef, six pounds of any white meat, seasoned, and an onion, if liked; put it in a stone jar, and tie down with bladder; let it boil twelve hours in a large saucepan of water; then strain it off. A tea or table-spoonful is enough for an invalid, if taken several times during the day. (It is well to know, that what remains after the soup has been strained makes excellent common stock with additional water.)

(*c*) Strong Meat Jelly for Weak Persons.—Take about two pounds of lean beef, cut in pieces, with a hock of ham about the same weight, and a knuckle of veal of eight or ten pounds, a small quantity of salt and mace, without any other spice; cover it with water and stew seven hours. Strain, and when cold take off the fat; clear it with whites of eggs, and pass it through a jelly-bag. The produce of jelly from the above proportions should be about five quarts; to be taken warm or cold, as best suits the patient.

(*d*) Tea-kettle Broth.—Cut some small squares of crumb of bread into a broth basin, and some finely chopped parsley, with enough of salt to flavour it; pour over it some boiling water, softening the whole with a spoonful or two of cream or milk. Some invalids like the flavour of mint, and peas when in season; and if this can be allowed by the medical man, the water used must have a few young peas, or pea-pods, and a leaf of mint boiled in it, before pouring it over the bread; without this addition, it is often much liked by invalids, as being so free from grease, and so clean-tasting. A little clear gravy from under the dripping-pan may sometimes be added with advantage. Pepper may be used or omitted, according to the palate or the nature of the illness.

(*e*) Gravy-bread for Invalids.—Cut deeply into a joint of beef, or leg of mutton, while roasting; fill the opening with a thick slice of crumb of bread, and leave it there for half an hour, or till completely saturated with the gravy; then sprinkle upon it a little salt, with or without pepper, as is recommended, and serve hot.

(*f*) Toast Sandwiches for Invalids.—Toast carefully a very thin slice of bread; cut off the crust; spread two slices of thin bread and butter, also cutting away the crust, seasoning each with a very little made-mustard and a sprinkle of salt; lay the toast in the middle, serving it as a sandwich.

(*g*) Jelly or Blancmange for Invalids. Take the bones of a knuckle of veal, well scrape *all* the meat from them, and stew them four or five hours in two quarts of water; after it is cold, skim it clear from all fat and sediment; melt it, and flavour with home-made wine, and a little lemon peel. If for blancmange, the stock must be still more reduced, to bear the addition of some milk, flavoured with laurel leaf and lemon-peel; the addition of a little wine or brandy will, of course, improve it.

(*h*) Cow-Heel baked in Milk.—Clean well a cow-heel, and put it with two quarts of milk into an earthen jar; let it stand in a slow oven for five or six hours. The heel may be taken out, and served with a little parsley and butter, or eaten with mustard and vinegar, and the milk which resembles blancmange, skimmed when cold, then melted and flavoured, as in the above receipt.

(*i*) Soothing Nourishment in Consumption.—Beat up a table-spoonful of oatmeal and a table-spoonful of honey, with the yolk of an egg; pour upon it a pint of boiling water; then boil all together for a few minutes.

(*j*) A Cooling Drink in Illness.—Pour a bottle of soda water on half a pint of boiling milk, and re-bottle it.

(*k*) For Barley-water, Linseed Tea, &c., see the list of Medicines.

(*l*) For Mulled-wines, &c., see page 884.

(*m*) Effervescing Draughts are described at page 390.

(*n*) Mild Chocolate for Invalids.—Take one square of chocolate (the sixth part of a cake), shave it, and boil it in a pint of water five minutes; then add a pint of skimmed milk; boil them together a little while; then add a tea-spoonful of arrowroot wetted with cold water, and boil it very slowly for five minutes longer.

(*o*) A Strengthening Jelly for Invalids.—One ounce of isinglass, half an ounce of gum arabic, a pint of port wine; sweeten with sugar-candy or loaf sugar, and then flavour with cinnamon, or a little nutmeg and lemon-peel. The cinnamon may be boiled in a quarter of a pint of water for an hour; strain, and add the isinglass with another quarter of a pint of water; strain when it is dissolved, and add the other ingredients. Take a wine-glassful the first thing in the morning and the last at night, melted; or eat it cold, taking a piece the size of a nutmeg occasionally.

Another.—Take three ounces of isinglass, two ounces of candied Eringo root, and one ounce each of conserve of roses, pearl barley, and rice. Put them in two quarts of water, and simmer about five hours till reduced to less than a pint. Put a spoonful of it into tea or any other liquid food, or take it alone.

(*p*) Mutton Custard for Bowel Complaints or Consumptive Cases.—Take two ounces of fresh mutton suet shred fine and half a drachm of cinnamon, or some grated nutmeg, and boil in rather more than a pint of milk; when boiled, to be set by the fire till the scum rises, which should then be carefully taken off. Half a tea-cupful may be given, warm or cold, as the patient prefers, three or four times a day. It should be continued till the complaint is quite cured.

(*q*) Caragheen, or Carragon Moss.—Take a quarter of an ounce of Caragheen, and steep it for a quarter of an hour in water; rinse, and put it on to boil in a pint and a half of sweet milk, a stick of cinnamon, and a bit of lemon-peel, and sugar to the taste; let it boil very gently till the Caragheen is dissolved, then strain through a muslin bag; fill the shape, and let it stand some hours before turning out. It does not require heating to turn out, but to be loosened round the edge with a knife. It is an excellent medicine for all chest complaints and coughs, and may be taken warm, a tea-cupful at a time; or, instead of boiling in milk, used as stock, and seasoned like calf's-foot jelly.

(*r*) Rice Water is used in diarrhœa as the only drink which will not increase the mischief. It is made by boiling a spoonful of washed Carolina rice in a pint of water for two or three hours, reducing this with more water until it is thin enough to suit the palate. A little lemon-peel may be added towards the last to give flavour; and it should be sweetened to the taste. It makes a very pleasant drink. Nutmeg is liked by some people, and cloves or cinnamon by others, as an additional flavour.

(*s*) Fresh Fruit Jelly.—Dissolve one ounce of isinglass in half a pint of water, then add a pint and a half of fruit juice of any kind, and from half to three-quarters of a pound of sugar, according to the taste. Boil for a few seconds, and use when cold. There is no necessity for a jelly-bag in this case.

2215. An Invalid Tap (see *fig.* 190) has been invented and used for some years, by which small quantities of soda-water, champagne, or any effervescing fluid, are drawn off through a cork without the escape of the carbonic-acid gas from the remainder. A borer is first passed through the cork and withdrawn, after which a small straight tap, furnished with a moveable point, is forced into the hole made by it, and as soon as the point makes its appearance at the inside of the cork it falls into the bottle, allowing the fluid to enter the tube and to pass out as soon as the tap is turned. In this way, a bottle of soda-water may be divided into five or six portions, or a bottle of champagne used by single glasses. (The tap is sold by William Richardson, 53, New Buildings, North Bridge, Edinburgh.)

Sect. 7.—Nursing the Sick.

2216. In Cases of Illness almost as much depends upon the nurse as upon the medical treatment; indeed unless there is some one calculated to carry out the instructions of the medical man, it is hopeless to expect much benefit from them. Some people are nurses by nature, and require no teaching, while others scarcely ever attain even the proper mode of smoothing a pillow or arranging the bed-clothes. Cheerfulness and alacrity, without boisterousness, are the essentials to success, especially if united to that womanly sympathy with suffering which tends so much to soften the hours of pain or sickness. Even the dress should be attended to, for invalids are very captious and inclined to find fault wherever there is an opening for criticism. The colours should be light and pleasing to the eye, avoiding on the one hand those which are sombre and mournful, and on the other those which are decidedly gaudy. Officiousness in nursing is disliked by most invalids; but in this respect there is great difficulty in hitting the happy medium, some people preferring to be left alone, and only wanting the aid of a nurse when they find the necessity for it, while others, who are, however, but a small minority, are best pleased when they are constantly being asked if they want anything.

2217. Punctuality in carrying out the medical directions is a great virtue in the nurse, and should be carefully instilled into her by those who engage her. The meals and medicines are always ordered to be given at stated times; and in the severer forms of disease, it is always a good plan to write down the precise time for each, so that the nurse has a table to apply to, in case of forgetting her instructions. In typhus fever, in which the convalescence is accompanied by great prostration of strength, and in which as much food as the stomach will bear must be given, this point should be carefully carried out.

2218. In Changing Bed or Body Linen, the nurse should take great care that they are well aired, and, indeed, almost scorched at the fire. Some tact is often required to effect the change without fatiguing the patient. In very bad cases, the body linen may be taken off and put on again without raising the body from the bed, by slipping the night-gown over the head, and taking the arms out, then rolling the whole body towards the other side of the bed, the foul linen is left behind, and may be removed. In putting it on, the night-gown is gathered up into a fold in front, and laid upon the part of the bed which the patient has just left, then rolling her back again, the back lies in the proper way upon the back of the gown, and the front may be lifted over the head, after which it is easy to put the arms in the sleeves, and to pull all smoothly down. In order to change the under sheet a somewhat similar plan is adopted. After folding it in half, it is laid upon the side of the bed unoccupied by the patient, the upper half is then folded over and over again close to the side, upon which the patient is turned or rolled; and in doing this, the assistant-nurse or housemaid draws the folded part of the sheet smoothly to the other side, and thus the patient is restored to her original position. Constant changing of the linen is desirable in all diseases, but especially in fever, in which, indeed, a daily change is often necessary.

2219. In Giving the Food ordered for the invalid, everything ought to be scrupulously clean, and arranged with some pretensions to elegance. The sickly stomach is easily offended, and a dirty cloth or disagreeable-looking fork or spoon would easily destroy the appetite. The necessity for attending to the nature of the cookery has been dilated on in the last section.

2220. Every Good Nurse is fertile in expedients to relieve pain or weariness, but she takes care that as far as possible they are successful. If a bed-chair is wanted and is not at hand, a common light chair, *turned upside-down* and placed behind the back, answers very nearly as well. If the patient is very weak, a cord may be fastened to the posts of a four-post bedstead, or to a couple of hooks in the ceiling if these are not used, and by the aid of this as a fixed point the patient is enabled to raise himself whenever he likes with much less difficulty than he would experience with the unstable support of the nurse. If it is desired to lift a heavy patient from one side of the bed to another, the nurse must get on the bed and stand above him, and will thus have a good purchase. Sometimes the four corners of the sheet being held by four stout persons standing on chairs, the helpless patient is lifted from the bed while it is shaken and made comfortable. At others, one side is shaken up while the patient is lying on the other, and afterwards that side in its turn is put straight. Indeed the clever nurse has no end to the expedients to which she may have recourse in this department, remembering always not to exceed her province by tampering with the medical treatment.

2221. The Proper Ventilation of the

Sick-room is a point of the greatest importance, varying in degree with the nature of the disease and the time of year. Sometimes the window should be left open day and night; but this is not often safe, and is only applicable in sultry weather. A draught of cold air on the person of the patient should always be avoided.

2222. **The Amount of Light** to be admitted may safely be left to the wishes of the patient in most cases.

2223. **The Degree of Artificial Warmth** maintained by a fire is also greatly under the control of the patient's feelings, though these are not always the best guide. The medical man, however, will give instructions on this point. In all cases, an even temperature should be kept up.

2224. No **Superfluous Furniture** should be allowed in the sick room, and especially in cases of fever, where curtains and carpets are likely to hold the infection, and should therefore at once be removed.

2225. **Chloride of Lime, or Zinc,** in solution, destroys the smell of all discharges from the body, whether natural or diseased. A spoonful should be placed in the pan, or other vessel, appointed to receive them, and in that way all annoyance to the nose is got rid of. In cases of fever, or other infectious diseases, rags dipped in a diluted solution should be hung up about the room; the degree of dilution depending upon the strength of that furnished, which is generally marked upon the bottle.

2226. **After Infectious Diseases,** the bedding is generally sent to be purified, which is accomplished by the aid of lime. A weak solution of chloride of lime may be sprinkled over sheets and body-linen before washing; but all foul-rags, &c., had better be burnt. In very bad cases the walls of the room should be washed down with a solution of chloride of lime, and then re-papered or painted.

CHAP. III.

THE ORDINARY RESOURCES OF DOMESTIC MEDICINE AND SURGERY.

Sect. 1.—General Observations.

2227. **The Object of the Following Observations** is to enable the mother of a family to treat those trifling ailments which are within her scope, and also to act in emergencies during the time which must elapse before the arrival of a medical man. It is quite absurd to suppose that every slight attack of cold or cough must demand and receive the care of a physician. The mother will *generally* be able to do without his assistance, but at the same time she ought to be taught how to recognise the symptoms which will demand more knowledge and medical skill than she possesses, and such is the object of this chapter. For instance, in the case of slight feverishness, so common in young people, abstinence from food, with a gentle cooling mixture, &c., will, in all probability, suffice in a few days to restore health; but, supposing further symptoms to show themselves, either of a typhoid nature or depending upon the poison of small-pox or scarlatina, it is necessary at once to decide upon calling in medical advice. Two great points are here implicated—1st, the presence or absence of any fever more than ephemeral; and, 2nd, the question as to the existence or not of inflammation.

Sect. 2.—Fevers.

2228. **Fevers of all Kinds** are marked by shivering and languor, followed by increased heat, frequent pulse, prostration of strength, and disturbance of most of the functions.

2229. **Continued Fevers** have all the above symptoms, without primary local disorder, and also without any well-marked intermissions. They consist in this country of—1st, *ephemeral fever;* 2nd, *epidemic continued fever*, which is commonly known as *typhus fever*, *bilious fever*, *brain fever*, or *marsh fever*.

(*a*) **Ephemeral Fever, or "Common Cold,"** is a continued fever, of slight degree and short duration, extending usually to three days, but sometimes running its course in twenty-four hours. The *symptoms* are slight shivering, with nausea, loss of appetite, and general indisposition, pains in the head, back, and limbs, increased heat of surface, a frequent pulse, furred tongue, and slight thirst. A perspiration generally comes on, and terminates this feverish attack. The *cause* is either exposure to cold, or unwholesome food, or over-fatigue, or from exposure to the poison of some more violent fever. The **Treatment** merely consists in confinement to the bed, with slops, and a gentle aperient, followed by the cooling mixture (see par. 2196, *b*).

(*b*) **Epidemic Continued Fever, or Typhus**, is a contagious fever, of two or three weeks' duration, accompanied by extreme prostration of strength, great disturbance of the secretions, and mental manifestations, and a strong tendency to local complications. The tongue, at first, is pale, or slightly furred and tremulous, but afterwards becomes dry, and brown, or almost black. The lungs, brain, bowels, or skin, are, one or other of them, almost always attacked by inflammation of a low kind, and in most cases there is more or less delirium. The *symptoms of the premonitory stage* are those which chiefly concern the readers of this book, as few people will undertake the management of a case of typhus fever after it is recognised. It is generally ushered in by a succession of shivering fits, followed by severe head-ache, and aching in the back and limbs, great weakness and weariness. The surface of the body is cold and pale, the pulse either small and weak, or full, quick, yet compressible; the countenance looks dull and confused, but anxious, and the appetite fails altogether. Such is a well-marked case; but in others the symptoms are more obscure, shivering being absent, as well as all pain, and the only symptoms at all remarkable are the weariness and drowsiness, with *loss of sleep* and appetite, and tremulous pale tongue. When they occur after exposure to contagion, there is seldom any doubt on the subject. The after progress of the disease is too complicated to be here introduced, as also is the treatment; but in doubtful cases the mother should always take care how she uses any powerful aperients, or she may do irreparable mischief.

2230. **Intermittent Fever, or Ague**, is a fever with distinct febrile paroxysms, occurring after intervals, in which the symptoms entirely disappear, and called remissions. These occur in three forms:—

(*a*) **The Quotidian Ague**, in which the paroxysm comes on every 24 hours.

(*b*) **The Tertian**, in which they occur once in 48 hours.

(*c*) **The Quartan**, in which the paroxysm comes on once in 72 hours.

(*d*) Each paroxysm consists of a *cold stage*, in which the whole body is shrunk and pallid; of a *hot stage*, in which the heat of the body returns, and the skin becomes swollen, tense, red, and pungently hot to the touch—the pulse being quick, full, and hard, and there being great thirst; and of the *sweating stage*, in which a perspiration comes on, first showing itself in the face and neck, and gradually extending itself over the whole body.

(*e*) **The Cause of Ague** is always miasma, from decomposing vegetable matter.

(*f*) **Quinine** is the only remedy within the reach of domestic medicine, in doses of 2 or 3 grains three times a-day, joined, if possible with change of air, to a high and dry one, without which this disease can with difficulty be relieved. In severe cases, other treatment is required, but they demand the skill of the experienced physician.

2231. **Remittent Fever**, is accompanied by distinct exacerbations of variable duration and severity, but without the complete intermission of ague. In adults, it is in this country scarcely to be distinguished from typhus fever; and the treatment is identical with that adopted for that disease. The common gastric fever of Great Britain belongs properly to this division, but it is very commonly considered as a form of typhus.

2232. **Infantile Remittent Fever** is the ordinary form in which fever shows itself in children, when it extends beyond the ephemeral fever so common with them. The evening attacks are very strongly marked, followed by night or early morning perspirations; but the remission during the day is not at all like that seen in ague, the child being evidently very unwell, with a furred tongue, loss of appetite, scanty urine, and prostration of strength. Vomiting very often accompanies this form, together with either severe constipation or diarrhœa. There is generally some slight disturbance of the brain at night, scarcely amounting to delirium, and not at all like that seen in typhus fever. The *cause* of this attack is very seldom clearly made out, but error in diet may generally be ascertained to have existed. The **Treatment** consists in mild mercurials, such as mercury with chalk, or blue pill, in small doses, followed by a very gentle aperient, such as rhubarb or castor-oil, and the fever medicine given at page 677. As a cooling drink the nitric acid may be given (see par. 1953); and if diarrhœa comes on, the sulphuric acid mixture (par. 2184) will be the most likely to allay it. In convalescence quinine or bark will almost always be required. The diet should be mild, but nourishing, and solid food should be carefully avoided.

2233. **Eruptive Fevers** in this country are confined to *small-pox*, *chicken-pox*, *scarlet fever*, and *measles*, together with *cow-pox*, *erysipelas*, and *miliary fever*.

(*a*) **Small-pox, Chicken-pox**, and **Cow-**

pox are characterized by an eruption of somewhat similar character. The first and second of them, however, are those only which can cause any alarm to the mother, as cow-pox never appears excepting as the result of vaccination. The *eruption* in small-pox is ushered in by a smart attack of fever, with vomiting, and generally diminished secretions. After forty-eight hours, minute red spots, raised above the skin, make their appearance, and then gradually enlarge until, by the third day from their showing themselves, a small vesicle is seen on the middle of each, having a depression in its centre, and gradually increasing in size until a round flat pustule is formed of the size of a split pea, but with a well-marked cup in its centre. The fever goes on increasing until about the eleventh day, when the eruption scabs, and there is a cessation of its power; but after a time, in severe cases, a secondary fever comes on, accompanied with great restlessness, frequent pulse, scanty secretions, prostration of strength, and delirium. In this fever ventilation is required, but the exclusion of light has a great effect in preventing the pitting, which comes on if the pustule is allowed to attain full maturity in the light of day. In mild cases scarcely any TREATMENT is required beyond light and cooling drinks and attention to the bowels, which, however, should not be freely purged. In severe ones the powers of the physician are taxed to meet all the symptoms, and the domestic observer is quite out of her element. CHICKEN-POX, sometimes called SWINE-POX, is attended with a vesicular eruption on the head, face, and limbs, which runs a much quicker course than small-pox. The *symptoms* are slight feverishness and lassitude, followed quickly by an eruption of small reddish pimples, much resembling the first onset of those in small-pox. On the *second* day they show small vesicles, containing a colourless fluid, sometimes however of a straw colour. On the *third* day they arrive at maturity, soon after which they break, and a small thin scab is formed, without any matter or *pus*, as it is termed, as in small-pox. MODIFIED SMALL-POX is not very unlike chicken-pox, but the vesicles are longer in coming to maturity, and it runs a course varying in extent and severity between chicken-pox and regular small-pox. It is the disease which occurs after vaccination. The TREATMENT of chicken-pox and modified small-pox merely consists in rest and slops. COW-POX is the disease artificially produced; and as its importance is so great, so its course ought invariably to be watched by the medical vaccinator.

(*b*) MEASLES is ushered in by an attack of fever, with the usual premonitory symptoms. The remarkable and distinguishing features, prior to the eruptions, are a constant sneezing and weakness, with redness of the eyes. On the fourth day, small red patches appear, first on the face, and then on other parts of the body. They are generally in crescentic clusters, slightly raised above the level of the skin, but without vesicles and of a dusky red colour. They last three days, and then suddenly disappear, sometimes earlier, when there is a weakness of the constitution or any internal congestion. The fever goes on after the appearance of the eruption, but ceases on the second day after it shows itself, unless there is pneumonia or other serious complication. In mild cases there is nothing of this kind; but in bad cases, the brain, lungs, or sometimes the bowels, are the seat of severe inflammation. The TREATMENT consists in allaying the fever by abstaining from all solid food, and giving only cooling drinks or slops, such as barley-water and gruel. Bed is the best place in a moderately cool room, and the cooling mixture described at par. 2196 should generally be given, with the addition of ipecacuanha or antimonial wine, when the lungs are at all affected. In such cases, however, additional aid should immediately be called in. After measles, great care should be taken to keep the secretions in good order, and they should be rigidly watched for some time with that view.

(*c*) SCARLATINA, OR SCARLET FEVER, is also ushered in by severe fever, with very quick pulse and hot skin; *but no weakness of the eyes, or sneezing*. On the second day, a *bright scarlet* efflorescence makes its appearance on the chest, gradually extending thence over the whole body. At first it consists of numberless red patches, separated by spaces of the natural colour; but soon these spots coalesce, so that in a few hours the redness becomes universal. This lasts three days, that is to the fifth from the commencement of the attack, and then the eruption again becomes patchy, and disappears in the reverse order in which it comes on: sometimes there are small miliary vesicles, and in most cases the skin is rough to the touch; but the red patches are not raised. The cuticle always peels off (called desquamation). The mucous membranes are also more or less implicated, that of the stomach and bowels being always greatly disturbed, as shown by the red tongue, enlarged tonsils, and "sore throat." The papillæ of the tongue are elongated and project as bright red points through the white mucus which covers its surface, and afterwards peels off, leaving the whole tongue bright red and glistening, as if raw. The fever leaves with the rash. Sometimes the throat symptoms are unusually severe, and then the glands are enlarged, together with swelling of the back of the throat, causing great difficulty of swallowing. These symptoms are carried to such an extent in some cases, that death takes place from suffocation in 24 hours, and the disease is then said to be malignant. There is seldom much eruption in this form, or, if any, it is very late in showing itself. The TREATMENT depends upon the severity of the case, little more than cool air and rest being necessary in the milder form. In malignant scarlet fever, domestic remedies are out of the question. Whenever the throat is affected, and the mother still thinks it right to keep the management of the case, a blister should be applied to the throat, or a very strong mustard poultice, or liniment. Purgatives are never justifiable in this disease, and no aperient medicine is necessary, further than enough to produce a *gentle* action of the bowels, for which castor oil is the best remedy. A cooling diaphoretic mixture, par. 2196, may be ventured upon with advantage; and when the skin feels very hot, it may be sponged with vinegar and water, but not unless the eruption is well out, and *the skin feels burning hot*. *After* scarlet fever, dropsy is very apt to occur; and in order to avoid the chance of its coming on, the secretions of bile and urine should be carefully watched, and, if imperfect, ipecacuanha and rhubarb should be given for the former, or nitrate of potass, with sweet spirits of nitre, &c., for the latter.

(*d*) MILIARY FEVER comes on with the usual feverish symptoms, followed at an uncertain period by a crop of small red pimples scattered over the whole body, and about the size of millet-seeds. They first show themselves upon the neck and breast, and then gradually extend themselves. The touch discovers that they are elevated, but the unaided power of the eye fails to see the difference from the level skin. After about twelve hours a very small vesicle shows itself, generally containing some limpid fluid, but sometimes of a red colour. In two or three days these break and scab, and the disease is at an end. The *cause* is generally from excessive sweating of some kind in a debilitated habit of body. The TREATMENT will mainly depend upon the general health, which should be attended to as if no fever was present. Mineral acids are generally of service, with attention to the secretions, which are often much disturbed.

(*e*) ERYSIPELAS is often classed among the skin diseases, but it is too clearly a constitutional attack of a feverish nature to be omitted from the list of fevers. It is of two kinds:—1, erysipelas occurring without any injury, and called *idiopathic*; and 2, erysipelas after injuries, called *traumatic*. Many mistakes are made relative to this disease even among professional men of the old school, who confound with genuine erysipelas chronic eruptions of a very different character, though presenting a somewhat similar appearance. True erysipelas is, however, always attended with more or less fever, and its attack is sudden, running a comparatively rapid course, and requiring immediate attention. The peculiarity of the eruption is, that it has always a defined and raised edge, so that by the touch alone the practised hand could distinguish a case of erysipelas in a moment. There is a great tendency to spread, and sometimes the course is very rapid from one part to the other. Erysipelas of the scalp is attended with great danger to the brain, and should always be treated with promptness, requiring the immediate presence and supervision of medical skill. In most cases vesicles of a considerable size make their appearance, and as the inflammation subsides the cuticle peels off in large thick scales. There are various modes of TREATING erysipelas, which depend for choice greatly upon the peculiar character of each case, and it is quite useless to attempt any account here of their modes of administration. The disease is of such an urgent nature that no one ought, after a knowledge of its presence, to delay a moment in calling in medical aid.

2234. RHEUMATIC FEVER, SOMETIMES CALLED ACUTE RHEUMATISM, is a fever of a somewhat active type, characterised by the following symptoms:—Usual premonitory fever, generally after exposure to cold, full and hard pulse, *white and furred* tongue, costive bowels, urine high-coloured and scanty, a profuse and acid sweating of the whole body, and inflammation of a very painful character, in one or more of the joints. This goes on for some weeks if left to itself, or badly treated; and in most cases the heart becomes implicated, with enlargement also of the joints, which, one after the other, are attacked. In severe cases the treatment is beyond the reach of domestic medicine; but in mild ones an attempt may be made, by first clearing out the bowels with a brisk dose of calomel and jalap, and then giving a table-spoonful of lemon juice every two hours (neat), with little or no food. This treatment will often cut short an attack, and is the only one upon which much dependence can be placed, but none is invariably successful. Colchicum, calomel and opium, and other strong medicines, are often used by the professional man with advantage, but they are not fit for domestic exhibition.

(*a*) ACUTE MUSCULAR RHEUMATISM is ushered in rather suddenly with severe pain on motion, and extending to one or more muscles of the body. This pain is aggravated by sudden pressure, as in digging the fingers into the muscle, but that made gradually by the whole hand relieves it greatly. When very acute, warmth almost always aggravates the pain; but when more chronic, it relieves it. According to the situation of the attack and the muscles engaged, this form of disease is called *Lumbago* (in the loins), *Stiff-neck* (when in the neck), &c. The treatment best adapted for this form consists in a full dose of Dover's powder with 2 or 3 grains of calomel at night, followed by a black draught in the morning, and the turpentine liniment at page 676, rubbed in well over the parts affected. After which a piece of flannel or spongio-piline should be worn over it. This plan adopted early, generally gets rid of muscular rheumatism in a very short time.

SECT. 3.—INFLAMMATION.

2235. EXTERNAL INFLAMMATION in general is characterised by four symptoms, either of which occurs by itself in other forms of disease, but not grouped together. These are—1st, *swelling;* 2nd, *pain;* 3rd, *redness;* and 4th, *heat.* Whenever, therefore, these four symptoms co-exist, there is said to be inflammation present. It would occupy too much space to show here the exact nature and cause of each of those symptoms, but it will be sufficient to allude to them as *together* making up the condition which is called inflammation. When these are severe in degree, there is always fever accompanying them.

2236. INTERNAL INFLAMMATIONS are only recognized by the occurrence of pain and disturbance of function, generally accompanied with acceleration of the pulse and with fever of a kind termed inflammatory. In parts which are within the reach of pressure the pain is aggravated by it, and this is the chief means of forming an opinion in inflammation of the bowels and adjacent parts—the aggravation on a full inspiration being the mode in which it is tested in inflammation of the lungs. *The disturbance of function* in secreting organs consists in increase, diminution; or suppression of the secretion peculiar to each, varying according to the degree of inflammation. In the brain there is delirium, or entire loss of mental function constituting what is called *coma:* in the eye or ear there is intolerance of light or sound; and in the lungs there is difficulty in breathing, with increased frequency in the respiration and alteration in the secretions, generally accompanied with cough.

2237. THE INFLAMMATORY FEVER is ushered in with shivering, pain in the head and back, and other symptoms of fever, frequent, full, and hard pulse, disturbed sleep, and more or less delirium. There is an aggravation of these symptoms towards night.

2238. INFLAMMATION is modified by the structure which it attacks. Thus, when it seizes on the serous membranes a quantity of serum or lymph is thrown out, and there is a tendency to form adhesions. Such is the case in pleurisy and inflammation of the external coat of the bowels. When the *mucous membrane* is attacked, mucus, pus, and sometimes coagulable lymph are secreted. succeeded, in bad cases, by ulceration, but never by adhesion. These occur in bronchitis and inflammation of the mucous membrane of the stomach, bowels, and bladder. In inflammation of the *cellular tissue*, serum is thrown out, causing swelling, or in worse cases coagulable lymph, or pus from which an abscess results. In the cellular membrane of internal organs, as the lungs and liver, inflammation, when acute, leads to softening and a deposit of pus, or when more chronic, to hardening or consolidation, by the deposit of coagulable lymph. *Fibrous tissues*, such as tendon and ligament, are prone to gangrene or ulceration. Then, lastly, the skin, when inflamed, becomes variously affected, sometimes containing a deposit of serum under its cuticle in various forms, as large and small vesicles, blebs, &c., and sometimes being merely raised into papular patches, or into scales, as in leprosy.

(*a*) PLEURISY is attended with severe pain on inspiration, referred to some part of the chest. There is little or no cough, but considerable fever, and a frequent hard and strong pulse. Blood-letting is required in most cases, with energetic treatment by calomel and opium, sometimes joined to antimony.

(*b*) PNEUMONIA, which is inflammation of the substance of the lungs, is attended also with pain on inspiration, but of a more dull character, and accompanied by cough, and an expectoration of tough, thick, and stringy mucus of a transparent appearance, but tinged with a rusty colour. The chief test is the sound on using the stethoscope, which gives a peculiar crackling. The pulse is full and hard, and there is considerable fever. The treatment consists in bleeding in severe cases, followed by the use of calomel, opium, and antimony, in large doses. Here, however, the aid of the physician should at once be called in.

(*c*) BRONCHITIS occurs in every degree, from the slight "cold and cough" to the severe form which often carries off its victim in two or three days. There is considerable fever accompanying this disease, followed by cough, without much increase of pain on inspiration, and sometimes with, and sometimes without, expectoration. If present, it is frothy and more or less thick and yellow. Very often there is audible wheezing, accompanied with rattling sound in the chest, or hissing, or bubbling, as if making soap bubbles. The breathing is generally, but not always, quicker than natural. The TREATMENT consists either in relieving the inflammation by producing a discharge of mucus, or by causing it to disperse by the astringent power of certain medicines which seem to act with specific force. Counter irritation is the most safe and valuable remedy for bronchitis, within the reach of domestic medicine. It may be applied to children, either in the form of the common Burgundy pitch plaster, or by suspending a piece of spongio-piline round the neck so as to cover the front of the chest, and sprinkling upon the inner surface of it some of the embrocation at (*a*) (*b*) or (*c*) par. 2190. Blisters, also, are within the reach of the mother's skill, as they are seldom misapplied in acute diseases of the lungs, pleurisy being the exception; and if there is cough, they will always do more or less good. If the symptoms are urgent, the medical attendant should be summoned; but in many mild cases, some one of the expectorant medicines already given will often give relief. In the bronchitis of children, which is the usual severe cough so common at that age, there is nothing so good as ipecacuanha and rhubarb, with soda. The dose varying with the age (see page 678).

2239. INFLAMMATION OF THE STOMACH AND BOWELS may be either of the external coat (*gastritis* or *peritonitis*), or of the internal or mucous coat, producing vomiting, diarrhœa, or dysentery, or of the muscular coat between the two, in which case spasm of the stomach or colic is the result.

(*a*) In GASTRITIS OR PERITONITIS there is violent pain on pressure of the abdomen, with great anxiety of countenance, gentle and small pulse, constipation, and in some cases vomiting. Bleeding is always required in severe cases, or leeching, together with calomel and opium in small doses, but the case is beyond the reach of unprofessional skill.

(*b*) DIARRHŒA must be treated according to its cause, for if this consists in the presence in the bowels of improper food, it is in vain to make the attempt to relieve it without getting rid of the offender. In children, especially, undigested food often remains in the body, producing irritation and diarrhœa; and they may generally be relieved by a dose of rhubarb and magnesia, with a little spice, which has hence received the name of "Anodyne powder" in many localities. In older persons a tablespoonful of castor-oil, with ten drops of laudanum, will have a similar effect. But when the cause is not easily defined, or when it is evidently of an epidemic character, one or other of the astringent medicines given under that head at page 674, will be more likely to do good. In DYSENTERY, which is a discharge of loose motions from the lower bowels only, an injection of starch, with laudanum, will generally be of service; and is the only remedy which the mother of a family can safely employ in the disease. From 5 to 50 drops may be thrown up in starch, according to the age, and repeated if it cannot be retained.

(*c*) SPASM OF THE STOMACH, OR COLIC, may either of them be treated, until further advice is obtained, by a dose of castor-oil and laudanum, or, if this is returned, by giving 30 or 40 drops of ether, with a similar quantity of compound tincture of lavender, and a mustard plaster, to the outside skin, applied very hot, and kept on as long as possible.

(*d*) THRUSH is a disease occurring very commonly in infantile life. It is marked by an eruption of small white specks on the tongue, and inside of the mouth. These discharge a glutinous mucus, which forms a thick white fur, adhering at first tenaciously, and afterwards falling off, leaving the membrane red and shining. Sometimes they end in mortification, when the surrounding parts swell, and become spongy, the mouth remaining open, and allowing the saliva to escape. There is always with this state great prostration of strength, absence of fever, and feeble pulse, the child generally sinking from diarrhœa. The TREATMENT best adapted for this disease consists in giving minute doses of sulphuric acid, barley water, or rice water, internally. Two or three drops, up to eight or ten, according to the age, may be given three times a day in either of the above vehicles, and the diet confined to the mildest forms of farinaceous food. Borax and honey form a very common local application to the mouth, and appear to answer the purpose as well as anything else; but the real mischief is in the stomach, and this is not affected by any outward application.

2240. DYSPEPSIA affords too wide a field for discussion here, as its forms are multifarious, and widely separated in cause, effect, and treatment.

(*a*) Under the Head of Stomachics are given at par 2199, several forms of medicines, which are sometimes of service, but the application to individual cases would occupy many pages, and must, therefore, be omitted for want of space.

2241. Croup consists in an active inflammation of the top of the wind-pipe, characterised by a peculiar crowing inspiration, and generally attacking young children after teething. It commences with hoarseness and symptoms of common cold, which rapidly go on to such an extent as to produce a mechanical impediment to breathing, and often ends in a few hours by suffocation. It is not a contagious disease, but often attacks nearly all the children of particular families, and these sometimes more than once. The Treatment must be energetic. Two, three, or four leeches should be applied to the throat, and ipecacuanha or antimonial wine should be given every quarter of an hour until it produces vomiting, which is almost always followed by relief. The best plan in families at all subject to this complaint is to keep a small bottle in the house filled with ipecacuanha wine, sweet spirit of nitre, and syrup of saffron in equal quantities, of which from a tea-spoonful to a table-spoonful, according to the age, may be given as above directed. As soon as nausea is produced a dose every two hours will suffice. Some people give calomel, but for domestic use the above is the best treatment, and will rarely fail if commenced early enough.

2242. Hooping-cough is a spasmodic cough, of an infectious or epidemic nature, easily detected by the peculiar long inspiration, or "whoop," which accompanies it, and which is seldom developed in the early stage. The Treatment varies greatly with the nature of the attack and the state of health of the child. There is generally at first some degree of acute bronchitis, and lowering measures will be necessary. A leech or two or a blister will afford relief, with ipecacuanha wine and sweet spirits of nitre, and, if the bowels are costive, rhubarb in addition. After this stage nothing acts more beneficially in most cases than hydrocyanic acid, but it requires care in its administration, and is scarcely to be recommended for domestic use. In strong hearty children it will often cut short the disease, given in single or two-drop doses of the diluted acid two or three times a-day, together with Roche's embrocation, or the liniment of turpentine (par. 2070), well rubbed in to the spine and chest.

Sect. 4.—Skin Diseases.

2243. Itch is the most easily cured of all the ordinary skin diseases of children, and it is generally within the control of ordinary remedies. In its early stage it may be known by the presence of minute watery pimples in the clefts of the fingers, and at the bends of the arms and legs, where the skin is thin and tender; these itch so much as to occasion violent scratching, so that in a short time the vesicles are broken, and become scabbed, with considerable inflammation. The Treatment is very simple, consisting in the rubbing into the skin of the whole body, except that of the head, the compound sulphur ointment, for three successive nights, after which the whole body should be well washed with soft soap and water, and clothed in clean linen, the dirty clothes, &c., being thoroughly purified by washing; and, if a bad case, by baking, or even burning the bedding.

2244. Ringworm is an eruption occurring in a circle, or part of a circle, on the head, face, shoulders, or neck, or sometimes even on the lower parts of the body. Two eruptions are popularly confounded under this name, both having a circular appearance, one of them, called in medicine *herpes circinnatus*, is arranged in smooth, shining rings of a red colour, with a centre of sound skin, and occurs chiefly on the face and shoulders, *without contagion, and not causing the loss of the hair*. The other is called *porrigo scutulata*, and appears chiefly on the scalp, but sometimes on the forehead and neck, the ringworm appearance being presented only in its early stage. *It is highly contagious*, and is arranged, also, in rings, covered with minute pustules, and of a paler red colour than the first kind. In the centre is a patch of skin, not very different in appearance from the surrounding healthy parts; but when minutely examined, also covered with small pustules. *The hair ultimately falls off*, leaving a shining bald patch. The Treatment of the two kinds is quite different, the former merely requiring the application of any astringent, such as common ink, or blue stone, or a solution of nitrate of silver, or, better still, of chloride of zinc (two grains of either of the last to the ounce of distilled water). The latter must be treated as for scald head. (See next paragraph.)

2245. Scald Head (*porrigo*, or *tinea capitis*) is characterized by small contagious pustules appearing on the hairy scalp, generally in childhood, but capable of being communicated to adults. The pustules are small and irregularly round, containing a yellow matter, which scabs round the hairs, with a central depression, corresponding generally with a hair. The health is usually slightly impaired, either as a cause or effect of the disease, but there is no fever. Prior to the outbreak being detected, there is generally some increase of the ordinary scurf, which is browner than usual. Besides the *porrigo scutulata*, described in the last paragraph, there is also another form, known as *honeycomb scab* (*porrigo favosa*), which attacks the scalp, and often extends down over the face. The pustules are more numerous, and unite together to form a thick yellow scab, marked by numerous depressions, and bearing some resemblance to a honeycomb. In the *porrigo scutulata* the distinct rings are soon lost, and there are red patches, clusters of yellow pustules, scabs in all stages, and bald spots all occur on the same head. The **Treatment** is almost entirely local, though if the general health is reduced it must be supported by good living and tonics, or local remedies will be useless. The first thing to be done is to cut off the hair and loosen the scabs, so as to enable the application to reach the skin itself. A large linseed-meal poultice is the best application for this purpose after using the scissors as closely as possible, or in the early stage shaving with a common razor. After this apply an ointment composed of 1 drachm of iodide of mercury to 1 ounce of lard; let it remain on twenty-four hours, then wash all off with yellow soap, and apply the ointment again. Repeat this every day, using the iodide of sulphur, made of half the above strength, on alternate days if the mercury causes too much irritation, in which case also a poultice of linseed-meal may be applied over it. Usually, however, in a day or two it acts in a most magical manner, and reduces the disease to a mere scurf. This, however, must not be considered as a cure until the skin is sound and the hair comes on again, which is always the case in course of time. As a change, the creasote ointment, (par 2094), may sometimes be employed; but I am satisfied, from long experience, that every case of scald-head may be cured in a comparatively short time by the proper use of the above remedies, which seem to act by destroying the vegetable fungus in which the disease essentially consists. When there is nothing but a little scurf remaining, a wash composed as follows may be used instead of the ointment:—Take of chloride of zinc 10 to 12 grains; Price's glycerine, 2 ounces; rose-water, 6 ounces. Mix.

Sect. 5.—Domestic Surgery.

2246. **Scalds and Burns**, when not very severe, are best treated by brushing them over *until the pain ceases*, with equal parts of turpentine and linseed oil. After the cessation of the pain the quantity of turpentine is gradually diminished, and the oil may be thickened with finely-powdered chalk, so as to make an ointment, which is to be spread on linen or lint, and will generally effect a cure in all common cases. When, however, the burn is severe, there is nothing like the carded cotton (sometimes called medicated cotton), applied immediately in a thick and uniform layer, and kept on until loosened by the discharge, at the end of three or four days, when those parts which are saturated may be gently removed, and replenished by fresh pieces, the great point being to exclude the air. In such cases, however, the aid of a surgeon is generally required.

2247. **Chilblains** are best *prevented* by rubbing spirit of turpentine into the hands and feet before the cold weather sets in with violence; also by keeping them as warm as possible. Washing in cold water for delicate young females will rather aggravate than prevent the mischief, though this is contrary to the popular belief. If the smell of turpentine is objectionable, use equal quantities of the liquor of ammonia and rose-water. When chilblains have broken, the ointment of nitric oxide of mercury is the best application, with the use of the solid nitrate of silver or blue stone, if there is proud flesh (see Caustics, page 676).

2248. **Chapped Hands** may be entirely prevented or cured by the use of Price's glycerine, which may be scented with any essential oil. This should be rubbed on at night, either to the hands while sound, or the chaps when produced, and will invariably cure or prevent this disagreeable result of cold.

2249. **Bed-sores** are occasioned by long pressure on the skin covering the prominent parts of the body, either in those who are confined to their beds, or who cannot lie down at all. In such cases the skin should be watched, and when at all red, it should be washed with hot brandy-and-water, and then powdered with fine starch (violet powder). If in spite of this precaution a sore appears, it should be protected by a water-cushion or water-bed, which takes off the pressure, and it will then almost always readily heal, with the application of the ointment of nitric oxide of mercury, or a piece of soap plaster. Hooper's water-pillows and bed are let out at a weekly or monthly payment, or they may be purchased at rates varying from £1 1s. to £8 8s., according to size. They are far superior to air cushions, or to the cumbrous water-bed of Dr. Arnott. A pad of carded cotton, in slight cases, will often give great relief. Plasters spread on leather soon get out of place, and afford little or no relief.

2250. **Sprains** are too well known to

need description. They should, if severe, be treated by the application of leeches, in number according to the age and severity of the sprain; after which, until the bites are healed, cold water is the best application. When healed, an evaporating lotion (see par. 1945), may be applied, taking care to give entire rest to the joint.

2251. Wounds, when they are Cut with a Sharp Instrument, should be neatly brought together, and the edges retained in apposition, either by means of isinglass-plaster, or diachylon, or in the fingers by a simple piece of linen, which answers all the better if dipped in the blood. When the bleeding is severe, and continues for more than a quarter of an hour, an artery will generally require to be tied, and for this a surgeon must be called in. In the meantime, pressure on the wound itself by means of a folded pad of linen, or a tightly rolled pocket-handkerchief, will generally restrain the bleeding; or in the limbs, a tape or cord may be tied round *nearer the body than the wound*, and made very tight by inserting a ruler or fork, or a piece of stick, and twisting this several times. The plaster should never be removed under three or four days.

2252. Lacerated Wounds, if badly torn, will not heal by what surgeons call the first intention, though it is in most cases better to give them the opportunity by binding them up with plaster, as above described. By means of the isinglass-plaster, which is not readily soluble in cool water, the wound may be brought together and a light bandage put over it, after which a stream of water at 90 degrees may be kept slowly running over it, so as to reduce the temperature slightly below that of the blood. A vessel of water heated to more than 100 degrees may be placed above the level of the wound, and by fixing a cock in this, and then turning it very slightly, a very small stream may be conducted to the wound, and this being laid in a waterproof cloth, the water is conducted from it to any convenient receptacle. By these means I have succeeded in healing very frightful lacerations of the hand and other parts, continuing the stream for three or four days, day and night, and moderating the temperature according to the sensations of the patient, which are always the best guide. After the expiration of the period named above, if the parts are discharging matter to any extent, with sloughs or dead parts, a poultice of linseed-meal is the best remedy, until the wound becomes clean; when the red precipitate ointment, or the ointment of resin, will generally complete the cure, using a caustic if there is proud flesh (see Caustics).

2253. Bruises are sometimes very painful and serious injuries, and require the application of local remedies. Where the extravasation of blood is excessive, slight punctures may be made with a lancet, or leeches applied *at once*. After this, nothing answers so well as the stream of water described in the last paragraph, or an evaporating lotion (par. 1945), used warm, mixing it when made of double strength with an equal quantity of water. In bruises of the face, with extravasation, such as a "black eye," early puncture is the best remedy, followed by warm fomentations with the evaporating lotion; and when the inflammation is subdued, apply the chlorinated soda lotion (par. 1979).

2254. Boils are very troublesome abscesses, accompanied with destruction of a small piece of skin, causing what is called a "core," or "slough." Poultices relieve them the most; but they are apt to produce a second crop, and are, therefore, objectionable on that score. The best remedy is a piece of leather spread with soap cerate, or honey and flour.

2255. Abscesses are collections of matter *beneath the skin*, and, in some cases, occupying part of one or other of the large cavities of the body. When in the head, neck, or limbs, they appear as inflamed swellings, which, after a time, varying with the activity of the inflammation, come to a point and break. Sometimes, however, it is desirable to avoid a large collection of matter, or a destruction of skin, or to relieve pain, and then a lancet is passed into the abscess, and its contents are evacuated. In this case a piece of lint is left in the opening to prevent its edges healing, and thus necessitating a fresh operation. Abscesses, however, generally come under the inspection of the surgeon. In most cases a poultice of linseed meal or bread will be desirable, relieving the pain by relaxing the skin, and soothing the irritated nerves. Spongio-piline is by many said to answer better than a poultice, when kept wet; but it certainly does not relieve the pain nearly so well, and I have never known it liked by those who had tried both. A Whitlow is an abscess at the end of the finger, occurring either from inflammation at the root or edge of the nail, or at the end of the bone. In the former case it is comparatively trifling, and may readily be relieved by letting out the matter, or by poulticing, which generally allows its escape. When collected at the edge of the nail, by separating this from the skin without cutting, a minute point of matter will generally escape, and the pain and inflammation at once cease. In cases of disease of the bone, the mischief is much greater, and nothing but an incision down to it will prevent the loss of the last joint, together with the nail. A surgeon should, therefore, at once be consulted.

2256. Corns are of two kinds, hard and soft. The former arise from thickening of the cuticle, causing pressure upon the skin beneath, and acting as a foreign body. The *remedy* consists in paring away the hard cuticle either with the scissors or knife, and then in bad cases wearing a piece of soap-cerate or buff-leather. *Soft corns* are of a half-warty nature, and always occur between the toes. They are actual growths from the skin, which secrete a thickened and imperfect cuticle. The *best remedy* is great cleanliness, washing the parts with soap constantly, and then applying the solid nitrate of silver, which causes the cuticle to become dry and to shrink up. A piece of carded cotton should *regularly* be worn between the toes, and with these precautions soft corns may always be rendered free from pain, though not cured without repeated applications of the caustic. Blue-stone acts quite as well, but it requires more frequent application. In either case, after a few days the dry cuticle should be pared off and the caustic re-applied; but care is required in the use of the nitrate of silver, or an ulcer of a painful character will be produced.

2257. Bunions are inflamed *bursæ*, which are bags placed over the prominent joints to protect them from pressure. They occur chiefly over that of the great toe, and are exceedingly painful. The *best application* for an inflamed bunion is the evaporating lotion, (par. 1945), used hot, resting the foot, and keeping it elevated. When the inflammation is reduced, apply a piece of leather spread with a plaster of ammoniacum with mercury, and keep it on for some weeks, renewing it if necessary.

Sect. 6.—Treatment of Poisons.

2258. The Successful Treatment of a Case of Poisoning mainly depends upon the shortness of the interval which elapses from the taking of the poison to the exhibition of the antidote, so that here it is of the utmost importance that there should be some guide at hand to which the heads of a family may apply during the anxious moments when medical aid is expected. A very simple precaution against accidental poisoning has lately been proposed and made imperative in Ireland by an order published in a supplement to the *Pharmacopœia* of the Irish College of Physicians. This is to the effect, that all medicines intended for external use, and also all remedies of a poisonous nature, shall be kept and dispensed in bottles of an angular form, while those medicines or drugs only which are intended to be swallowed shall be kept in round bottles or phials; so that whether in the light of day, or in the dark, the touch alone will serve to discriminate them. Beyond this, however, the legislature will probably soon interfere in this country, and place some restraint upon the sale of deadly poisons which are hourly going on throughout the kingdom. The following are the most readily accessible antidotes for the more common poisons, that is those most likely to be used wilfully or by mistake in ordinary life.

(*a*) Opium, Laudanum, and Morphia; or for the Child, Syrup of Poppies, Godfrey's Cordial, and other Milder Preparations of Opium.—These all may be either taken wilfully, or be administered by mistake, or in an over-dose. The Symptoms are great drowsiness, followed by stupor, and heavy sleep. Sickness sometimes causes their rejection before they have time to produce their fatal effects, but in general when given in large doses there is nothing of the kind. The Treatment consists in producing vomiting, for which ipecacuanha is too slow, and the sulphate of zinc is the best remedy (see page 673); of this from ten to thirty grains should be dissolved in a tumblerful of water and given immediately. It generally produces vomiting in a few minutes, but if not, the inside of the throat must be tickled with a feather, or irritated with the finger. One or two tea-spoonfuls of sal-volatile in water may also be administered, and the patient kept awake by any means, however painful, walking about the room being the least obnoxious of any. As soon as the stomach is cleared of the poison, which should be encouraged by giving repeated draughts of mustard-and-water (half a tea-spoonful dissolved in half a tumbler), a cup of hot coffee may be administered, and the patient kept awake by walking until the arrival of the medical man, who will judge of the propriety of allowing sleep; and not till then is it safe, or at all events for six or eight hours after the poison is rejected. Cold water dashed over the head and down the back is a good remedy in aid of the above, or a mustard plaster to the stomach.

(*b*) Belladonna, or Deadly Nightshade; Hellebore, Hemlock, Foxglove, Laburnum-berries, Monkshood, Laurel-leaves, Yew-leaves and Berries, Arum, called also Lords and Ladies, Poisonous Fungi, Wild Parsley, and Savine, are all of them at times eaten by children from motives of curiosity, or sometimes with more improper intentions. The Treatment in all cases consists in procuring the rejection of the poison by means of some emetic, the sulphate of zinc being the best (see *a*). If this is not at hand, mustard may be tried (see also *a*), or ipecacuanha in doses varying from 10 grains to 30, suspended in water. If there is great depression as a consequence of the poison (which is particularly likely to be the case after digitalis or laurel-leaves), sal-volatile or brandy, or both, must be administered. Or if hemlock or monkshood have been taken, strong coffee is the best remedy after the vomiting has ceased.

(*c*) Arsenic is seldom taken by accident, though such a thing has occurred, and may occur again, as long as it is sold in its natural state as a white powder, differing very slightly in appearance from carbonate of soda, or cream of tartar, or whitening. It is not very soluble, but sufficiently so to cause death by moderate quantities of its solution in water. The Treatment consists as before in administering an emetic, and here, perhaps, ipecacuanha is better than zinc, especially after the first dose, as it is not so irritating and does not increase the subsequent inflammation of the stomach. The stomach-pump is generally used, but when arsenic in substance has been taken, it is not nearly so useful as a powerful emetic. Vomiting should be kept up for at least an hour at intervals, with successive doses of emetics given with plenty of fluid; which also, if possible, should be somewhat glutinous, as flour boiled in water for a few minutes and diluted to the consistence of thin gruel. The after effects of arsenic will always, of course, come under the treatment of the physician; those which are described above, being only intended to be used prior to his arrival.

(*d*) Oxalic Acid when taken is often swallowed by mistake for Epsom salts, to which in appearance it is very similar. It is a violent corrosive poison, and causes horrible agony. The Treatment must be on the principle of neutralising the acid by a carbonate, which will form an insoluble oxalate, and this should be administered in the shape of chalk or carbonate of magnesia, both of which are generally at hand. As much as can be poured down the throat of either of them, mixed with water, should be given, and *in a quarter of an hour after* vomiting may be attempted by a dose of sulphate of zinc (par. 2180), as it is better to bring up the oxalate of lime or magnesia than to allow it to pass through the body.

(*e*) The Mineral Acids commonly known as Oil of Vitriol, Aquafortis, and Muriatic Acid are sometimes swallowed in their full strength, and if in any quantity, act so immediately on the mucous membrane as to preclude all chance of recovery. In small doses, however, dilution with water in large quantities is the most available remedy likely to be of service, followed by carbonate of lime, magnesia, soda, potass, or even soap. Any of these unite with the acid, and render it harmless, but there is seldom time for their exhibition.

(*f*) Phosphorus may be very probably sucked by children who have access to the common lucifer matches. The Treatment in such a case should be by an emetic of sulphate of zinc, or mustard, given as directed at (*a*). No time is to be lost in such a case.

(*g*) Corrosive Sublimate can hardly be swallowed by accident, except from being mistaken for some other medicine, as its taste is extremely pungent and acrid. It is a very rapid and virulent poison. The Treatment is fortunately easily managed by the exhibition of white of egg in large quantities, giving it without mixture with water, and following it up with an emetic of sulphate of zinc (see *a*). The quantity of white of eggs will only be limited by the capacity of the stomach or the number of eggs at command. If unfortunately there should be none, or only *a few* in the house, milk makes a good substitute, or even flour and water, but the latter is not to be wholly depended on. If the emetic does not act freely, salivation is almost sure to take place, as the corrosive sublimate is converted into calomel by the albumen; against this, in addition to the emetic, a mild dose of castor-oil should be given, so as to carry off the poison before it is absorbed into the system.

(*h*) Tartar Emetic and Sulphate of Zinc will generally effect their own removal, unless given in repeated doses, with a wilful intention to poison, and against such a horrible practice the directions in this book are not intended.

(*i*) Copper may be imbibed in poisonous doses from cooking in vessels made of this metal, or from sweets, pickles, &c., which have been coloured with it. In the Treatment the good effect of albumen is said to be considerable, as in corrosive sublimate; but it should be followed by emetics, as in other cases.

(*j*) When Lead has been taken in poisonous doses the mischief is not at once developed, but in a short time colicy pains and constipation come on, which last for some days. There is generally time to procure medical aid, but if not the Treatment consists in allaying spasm by opium, and producing an action of the bowels by some strong aperient. In slight cases an ounce of castor-oil may be tried, with 20 drops of laudanum every two or three hours, till it acts, together with hot fomenttations to the bowels, or a hot bath, if it can be procured.

(*k*) Prussic Acid and the Essential Oil of Bitter Almonds act so rapidly when taken in poisonous doses, that there is seldom time for any remedy to be applied, even if medical aid is at hand. If, however, the dose is not enough to destroy life at once, the following plan of treatment may be tried until the arrival of a medical man. If the power of swallowing is retained, give a table-spoonful of sal-volatile in half a tumbler of water, and dash cold water down the back of the head and spine. Or, if this power is lost, let strong smelling salts or liquor of ammonia be held to the nostrils, together with the cold water affusion mentioned above. This plan has in some cases saved the lives of those who appeared to be in a hopeless state.

(*l*) Nux Vomica or Strichnine, Cocculus Indicus, and other vegetable poisons of an unusually powerful character, may always be best encountered at once by the exhibition of an emetic previous to the arrival of a medical man.

(*m*) Bites, whether of a mad dog or of an auder, should always be at once forcibly sucked, taking care that the mouth is in a sound state. This removes the poison more completely than in any other way, and afterwards the wound may be burnt or the surface pared at the discretion of the surgeon when he arrives. A string may also in the interim be tightly tied round the limb above the wound, so as to retard absorption, and this is particularly useful in bites of the adder. In the deep bite of a mad dog, no remedy is to be relied on short of extirpation with the knife, or a strong caustic, such as nitrate of silver, or the red-hot iron, or the one followed by the other in very bad cases; but this of course will only be done by the surgeon himself.

(*n*) For the Sting of Bees, Wasps, Hornets, and Ants, there is no remedy like sulphate of copper or blue stone, applied by wetting and rubbing it on the part round the wound. The sting of the bee or wasp should previously to this be extracted, if left in.

(*o*) For the Bites of Fleas, Bugs, Gnats, or Harvest-bugs, eau-de-Cologne is the best remedy freely applied in its full strength.

(*p*) Lice may be destroyed by cutting the hair short, and rubbing in at night the ammonio-chloride of mercury (white precipitate), brushing it out the following morning, and taking care not to wet the skin while it is applied, for fear of salivation. Two or three applications will destroy any number; or the spirit of turpentine applied profusely in its full strength acts quite as well, but is apt to inflame or blister the skin.

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